Vol. 40 No. 1 March 2018

Sage Notes

Newsletter of the Idaho Native Plant Society • Promoting Interest in Idaho's Native Flora

An Ecological Assessment of Water Howellia and its Habitat

By Cat Wiechmann, Ecologist, Watershed Consulting LLC, Missoula, Montana

Water howellia *(Howellia aquatilis)* is living proof that size doesn't always matter. Okay, lighten up, it's just botany people! Water howellia may not be big, but it has proved to be a mystery for Pacific Northwest scientists. Specifically, how can there be a robust population of water howellia in one pond, but an absence of the species in an apparently identical-looking pond a quarter-mile away?

As a graduate student at the University of Idaho, I took on this question through an ecological study comparing pond systems with and without water howellia populations to inform conservation management strategies and goals. The study also aimed to narrow the knowledge gap regarding basic ecological and biological information for water howellia by assessing the environmental variables that positively correlate with this rare, endemic Pacific Northwest wetland plant species. A single growing season of funding was available, requiring the study to be intentional and concise in its strategy.

Water howellia is a winter-annual emergent aquatic herb in the Campanulaceae family endemic to the Pacific Northwest region of the United States. It roots in the pond substrate with extensively branched stems that are either submerged or floating. Water howellia produces two types of flowers: cleistogamous (non-showy, self-pollinating) flowers beneath the surface, and chasmogamous (showy, large) white flowers born on the emergent stems (Figures 1 and 2). The fruit is a small capsule with around 5 brown seeds. In 1994, water howellia was federally listed as threatened under the Endangered Species Act. At that time it was known from 107 occurrences in Oregon, Washington, California, Montana, and Idaho. By 2005, there were 214 known occurrences. Since then, five more populations were discovered in temporary floodplain ponds in Latah and Benewah counties, Idaho. These were the populations my study focused on.

Features of water howellia's life cycle strongly influence its rarity and ability to grow in various habitats. Earlier monitoring and other studies revealed that successful reproduction for the species is dependent on the wetting and drying cycles of the seasonally ephemeral ponds that it inhabits. Specifically, germination occurs in the fall under dry conditions when seeds are exposed to an aerobic environment and resume growth in an anaerobic environment when the ponds fill with water in the spring. Plants mature and produce seed mid-summer. In addition to specific life cycle requirements, water howellia is challenged by human impacts in and around its habitat. Specific human-related impacts thought to negatively impact water howellia include livestock grazing, agriculture, timber harvest, and manipulation of waterways. Erosion, compaction of soil and ger-

Continued on Page 6

In this issue:

An Ecological Assessment of Water Howellia..... 1
Letter from the President..... 2
Announcements..... 3
2018 INPS Annual Meeting..... 4
Native Seed Interns Collect Native Idaho Forbs..... 9
Palouse Prairie Remnant Restoration..... 10
Spring Brings Byrophytes..... 12
Book Review..... 13
Chapter News..... 14

IDAHO NATIVE PLANT SOCIETY
PO Box 9451, Boise, ID 83707
www.idahonativeplants.org
public3@idahonativeplants.org

INPS BOARD
President: Stephen Love
Vice-president: Tony McCammon
Secretary: Janet Bala
Treasurer: Karen Getusky
Past-president: LaMar Orton
Member-at-Large: Mel Nicholls
Chapter Presidents

CALYPSO CHAPTER
821 W. Mustang Ave.
Hayden, ID 83835
President: Derek Antonelli
Vice President: Vacant
Secretary: Karen Williams
Treasurer: Janet Benoit
Newsletter: Vacant

LOASA CHAPTER
340 E 520 N.
Shoshone, ID 83352
President: Bill Bridges
Vice President: Valdon Hancock
Secretary/Treasurer: Lois Rohay

PAHOVE CHAPTER
PO Box 9451, Boise, ID 83707
pahove.chapter@gmail.com
President: Karie Pappani
Vice President: VACANT
Secretary: Daniel Murphy
Treasurer: Caroline Morris

SAWABI CHAPTER
1506 N. Mink Creek Road
Pocatello, ID 83204
Co-Pres: Karl Holte and Paul Allen
Vice President: Geoff Hogander
Secretary: Barbara Nicholls
Treasurer: Ruth Moorhead

UPPER SNAKE CHAPTER
Currently Inactive

WHITE PINE CHAPTER
PO Box 8481, Moscow, ID 83843
whitepine.chapter@gmail.com
President: Judy Ferguson
Vice President: Pam Brunsfeld
Secretary: Bettie Hoff
Treasurer: Susan Rounds

WOOD RIVER CHAPTER
PO Box 3093, Hailey, ID 83333
President: Cynthia Langlois
Vice President: Lisa Horton
Secretary: Jeanne Cassell
Treasurer: Carol Blackburn

Letter from the President

As part of my job on the faculty at the University of Idaho, I collect native plants, grow out acquired seeds, and evaluate landscape potential of many species in field plots. These duties can be physically demanding. Each year, as the growing season wanes and fall arrives, I am ready to take up my pencil and move into a more sedate winter season. In the brittle cold of winter, I sit in my office, drink hot chocolate, and write up the results of the previous summer's work. Slowly, as time passes, the edge wears off of my feelings about the past summer's labors. As the days begin to lengthen and a first inkling of a spring glows in the distance, I begin to get restless. An intense desire emerges to pound the ground in search of new plant accessions, to see the green of fresh foliage, to photograph dazzling blooms, to observe the winter response of newly acquired species, and even to grab the business end of a hoe and go to battle with the weeds. I am guessing I am not the only INPS member who traverses this annual emotional path. I am guessing there are many of you who are right now in the midst of planning your next summer wildflower excursion. I'll repeat to you what I tell myself every late-winter day—the season of wildflowers will come.

Lithospermum ruderale, commonly known as puccoon or stoneseed, Boise Foothills. Illustration by Karie Pappani.

As you plan your outings for this coming summer, don't forget to include in your schedule time for a few days with your fellow native plant connoisseurs at our annual meeting. This year the meeting will be held up north at the Bumblebee Campground near Coeur d'Alene. The Calypso Chapter, led by Derek Antonelli, has put together an outstanding program. Included in the program is an evening of plant identification. So, bring your botany manuals and specimen containers to carry during the tours so you can collect some "unknowns." This will be a wonderful opportunity to rub shoulders with like-minded people. Hope to see you there!

Stephen Love, INPS President

ERIG needs YOU!

Want to help INPS support great projects? The Education, Research, and Inventory Grant (ERIG) program relies on funding from various sources such as memberships, workshops, and private donations. If you, your business, or your employer would like to make a donation to INPS to help keep the ERIG program successful, send your tax deductible donation to: ERIG Program, INPS P.O. Box 9451, Boise Idaho 83707. Checks should be made out to INPS. Please be sure to specify that your donation is to be used for ERIG projects. Or, you can make a secure online payment using PayPal on the INPS website. Thank you for your help!

Interested in applying for an ERIG in 2018? More information on how and when to apply is available at https://idahonativeplants.org/erig-news/.

College of Idaho Field Botany Class

The College of Idaho is offering a course in Field Botany for the May 2018 term. BIO 322 Field Botany will be taught by Dr. Don Mansfield. The course will run May 21-June 14, including several one-day field trips and a 4-day field trip. This is an intense, 4-week, 4-credit course that meets at the College of Idaho Herbarium Monday-Thursday (with one exception). Roughly every other day we will go into the field to view different ecosystems and collect plants while contributing to botanists' collective understanding of the flora of Idaho. In the lab on alternate days, we learn about major groups (mainly families) of plants and identify the plants that we collected in the field. One four-day field trip (May 31-June 3) is included as part of the Idaho Botanical Foray.

People who are not currently enrolled as students at The College of Idaho can take the class. The prerequisite for College of Idaho students is the introductory biology course. For a non-enrolled student, there would be an expectation of some prior introduction (even if long ago) to biology, which includes some basic plant biology OR a strong interest in pursuing background information as needed (e.g. orientation to basic plant anatomy, such as flower parts, etc.).

Contact the College of Idaho's Registrar's office (208) 459-5400 or registrar@collegeofidaho.edu to receive a Non-Degree Seeking Student Application and a Registration form for BIO 322.1 Field Botany. The tuition and fees for this course is $1255. •

Idaho State Univ. Botany Field Camp

Idaho State University/Idaho Museum of Natural History is offering a 2-week, 3-credit field botany class for summer, 2018. The first week will be based from the ISU campus in Pocatello; the second week from the Lost River Field Station north of Mackay, Idaho. Both weeks will be a mix of field trips and classroom time. The course focus will be acquiring field plant identification skills and the collection and preparation of botanical specimens. The course will be valuable for individuals interested in botany, ecology, conservation, education, or related careers.

Week 1: June 18-22 – Idaho State University

Week 2: July 1-8 – Lost River Field Station

Course instructors are Janet Bala and Michael Mancuso. The course is open to degree seeking students from ISU and elsewhere and to non-degree seeking students or professionals. Enrollment limited. Preference will be given to students who register by April 30, 2018. Join us for exploring and learning the Idaho flora!

To register, visit: https://www.isu.edu/registrar/calendars/academic-calendar/. More information about the course will be posted soon to:

https://www.isu.edu/imnh/

https://www.facebook.com/IMNH208/

Also, take a look at the Lost River Field Station Facebook page at https://www.facebook.com/pages/Lost-River-Field-Station. •

Please visit http://webpages.uidaho.edu/dtank/AFB/ for more information, including the course description and the online application form.

2018 Idaho Native Plant Society Annual Meeting

The 2018 INPS annual meeting will be held June 29-July 2, 2018. It will be hosted by the Calypso Chapter, Coeur d'Alene, Idaho. The meeting will be held at the USFS Bumblebee Campground Group Site, Coeur d'Alene National Forest. The focus of the event will be the Swedish American pioneering botanical collector, forester, and bryologist, John Leiberg. Leiberg was responsible for documenting flora throughout the Pacific Northwest, but particularly North Idaho. Many of the oldest herbaria specimens for species in our area were collected by Leiberg. He collected several species new to science.

Directions

Take the Kingston exit 43 from Interstate 90 and proceed north on the Coeur d'Alene River Road for 5.4 miles. Turn left across the Coeur d'Alene River onto the Little North Fork Road and proceed for 3.0 miles. The Bumblebee Campground is on the right.

Schedule of Events

Friday, June 29 (Event times subject to change.)

2:00 pm to 6:00 pm – Camp Check In

As you check in you will receive your camp site assignments. We will collect any fees that have not already been paid. You will get the details on the hikes and various activities you will be participating in.

2:00 pm to 6:00 pm – Informal Activities

From time to time during this period we will lead short walks around the campground area. You can participate in the "scavenger hunt" to see who can find the most species on the campground plant checklist. For those involved in the INPS Board, the meeting will be in Pinehurst Library at 107 Main Street starting at 3:00 pm.

5:00 pm to 7:00 pm – Informal Dinner

We will be cooking up hamburgers, sausages, and bean burgers. Please bring something to share with the group (salad, dessert, or chips). Seating may be limited so please bring a camp chair if you have one available.

7:00 pm to 10:00 pm – Campfire

Following the informal dinner there will be the traditional gathering of friends around the campfire.

Saturday, June 30

8:00 am to 11:00 am – Settler's Grove of Ancient Cedars Walk

We will caravan to the site of this old cedar grove where giant cedar trees date back to when Columbus landed. This will be a relatively easy walk through the grove. A forest fire swept through the grove in 2015. We will be able to observe the resilience of this ecosystem.

8:30 am to 4:00 pm – Twin Crags/Mount Wiessner Hike

This hike will be to one of the original sites that John Leiberg encountered during his expeditions through the region. Naturalist Jack Nisbet, our evening's guest speaker, will provide interpretation on the hike. The views and flowers will be spectacular and the story will be fascinating. The road into the area is challenging and may be blocked by snow. Only rugged vehicles should attempt this trip. We will try to augment with additional vehicles, but the number of participants will be limited in any case. Those earliest to register will be given priority. If road conditions preclude access to the area, a suitable alternative will be selected.

12:00 noon to 4:00 pm – Coal Creek Hike

The trail up Coal Creek provides a pretty little hike in a riparian zone. The path is well shaded and passes a series of waterfalls—perfect for a hot afternoon. There are carpets of mosses and ferns. Our vascular plant list from previous trips is approaching 100 species. It provides a good representation of North Idaho mesic forests. The trail is up and back so you only need to go as far as you choose. Participants in the Settler's Grove walk will be able to take part in this hike as well.

6:00 pm to 7:00 pm – Dinner meal

We will have our dinner meal catered by the Snake Pit Restaurant at the Bumblebee Campground Group Site. The Snake Pit has been in operation since the gold/silver rush days in 1880 and is famous in the area. The meal will consist of BBQ brisket, pulled pork, beans, salad, and lemonade. You are welcome to bring other beverages of your choice. A vegetarian meal of vegetable rice pilaf will be available on request. The cost of the meal is $16 per person. Purchase of the meal is optional. Your reservation needs to be received by June 15. Seating is limited so bring your camp chair for use during the meal.

7:15 pm to 8:30 pm – Annual Meeting

The Idaho Native Plant Society Annual Meeting will be held at the Bumblebee Campground Group Site. We will be in the open so bring your camp chair or blankets for seating. The meeting will start by addressing the business of the Idaho Native Plant Society. Following the formal business portion of the meeting, Jack Nisbet (teacher, author, and naturalist) will give a presentation on John Leiberg. Jack has written several well-received books of great interest. His topics have included David Thompson

(British fur trader, explorer, and map maker) and David Douglas (plant collector and botanist for whom the Douglas-fir and many other Northwest plants are named). Jack is currently researching another book on the exploits of John Leiberg. John Leiberg was born in Sweden. After coming to the United States, he settled near Lake Pend Oreille. He collected plant specimens for the New York Botanical Gardens and various US government agencies. His work was responsible for documenting the flora of North Idaho. Much of his work was centered on the site of this year's INPS annual meeting. Jack will draw upon his research findings for his presentation at the annual meeting.

Sunday, July 1

8:00 am to 4:00 pm – Revett Lake Hike

The trailhead for Revett Lake is 38 miles from Bumblebee Campground and is very near Thompson Pass on the Idaho-Montana border. The hike into Revett Lake is very scenic with a climb of less than 700 feet and is less than two miles long one-way. Our plant list from previous hikes has well over 100 species and provides a good representation of local subalpine forest flora.

9:00 am to 2:00 pm – Deception Creek Experimental Forest

The Deception Creek Experimental Forest is 19 miles from Bumblebee Campground. The forest was established in 1933 when large, old western white pines were important for producing lumber products. Research at the experimental forest focused on the ecology and silviculture of western white pine. The 291-acre Montford Creek Research Natural Area is located within the forest. Many species of plants are to be found including the rare deer fern *(Blechnum spicant)*.

5:00 pm to 8:00 pm – Informal Plant Identification Session

For the plant geeks among you, we will set up an area within the Bumblebee Group Camp for people to bring their plant materials and share in the efforts to identify these. You are welcome to wander in and out during the session.

6:00 pm to 10:00 pm – Campfire

We will start up the campfire for another traditional gathering of friends. Be sure to bring your best big plant that got away story.

Monday, July 2

8:00 am to 11:00 am – Ad hoc Activities

Let us know if there is anything special you want to see or do. Perhaps we can set something up.

11:00 am – Campground Check Out

Contact Information

Registration form can be found below or on the INPS website. The registration fee is $30 per adult with no charge for children. Calypso Chapter President, Derek Antonelli, can be contacted at ds.ca.antonelli@gmail.com or (208) 682-6139. Alternate contacts are Karen Williams, (208) 667-8790, and Janet Benoit, (208) 683-2407. Please complete and submit registration forms as soon as possible. Make checks payable to INPS Calypso Chapter. Mail to: INPS Calypso Chapter, c/o Derek Antonelli, 6723 W Eden Ct, Rathdrum, ID 83858. •

2018 INPS ANNUAL MEETING REGISTRATION FORM

Name(s) _____

Address _____

Phone _____ Email _____

Registration Fee: $30 per adult participant _____

Meal Requests: Number of meals at $16 per person _____ Vegetarian meals _____

Camping Requirements: Recreational Vehicle/Trailer _____ Size _____ Tent _____

Please Indicate Activity Preferences:

Saturday:

Twin Crags/Mount Wiessner Hike _____ Settler's Grove Walk _____ Coal Creek Hike _____

Sunday:

Revett Lake Hike _____ Deception Creek Experimental Forest Hike _____

Please mail this registration form with payment to:

INPS Calypso Chapter, c/o Derek Antonelli, 6723 W Eden Ct, Rathdrum, ID 83858

John Leiberg (Courtesy of New York Botanical Garden)

***Water Howellia**.....Continued from Page 1*

mination substrate, alteration of pond hydrology, and the transport/introduction of weed seeds, especially reed canarygrass *(Phalaris arundinacea)*, are some of the ways water howellia habitat may be impacted by these disturbances.

Although water howellia grows in freshwater ponds that fill and dry annually, the hydrology and landscape type vary greatly across its range. In California, populations grow in freshwater marshes and swamps. Water howellia was thought to be extirpated from Oregon, but in 2002 was found in vernal pools and oxbow sloughs at the William Finley National Wildlife Refuge. In Washington, populations are found in depressional scabland wetlands that depend on precipitation for their sole source of water. In Montana's Swan River Valley, over 140 populations occur in glacially carved depressions that fill with rainwater and groundwater annually. The six known Idaho occurrences inhabit seasonal floodplain ponds in the Palouse River and Spokane River floodplains. Idaho populations are unique because occupied ponds are entirely dependent on fluvial (river) hydrology through bank overflow and fluvial groundwater.

Figure 1. Water howellia flowers. Photo by Kristen Dubois.

Coming up with a research question that addresses the problem you are interested in is not always straightforward. In order to narrow the objectives of our work for this study, we considered water howellia's unique ecology, as well as previously successful rare plant investigations. The variation of water howellia habitat in different regions demands assessment in each hydrologic regime. We also must understand the ecological dynamics of the wetlands that water howellia occupies to advise management decisions. Wetland plant community structure can be influenced by a variety of factors such as hydrology, surrounding land use, seed sources, and dispersal dynamics. Factors to take into account include abiotic, biotic, resource competition, hydroperiod, and overall habitat assessment. My work focused on the floodplain populations and wetland habitat attributes in Latah and Benewah counties, with an emphasis on the maturation and germination stages. The research questions I asked were:

Figure 2: Water howellia with emergent stems and flowers. Photo by USFS.

- *What are the environmental abiotic/biotic factors that drive water howellia presence over a floodplain?*
- *What are the environmental abiotic/biotic factors that drive water howellia presence within a pond?*
- *What is the optimum temperature and moisture regime for water howellia germination?*

The study was conducted in floodplain wetlands of the Palouse River and the Spokane River where water howellia populations had been located and monitored by the Idaho Natural Heritage Program (INHP). Juanita Lichthardt, an INHP botanist, had also identified ponds that represented potential habitat due to their proximity to ponds with known water howellia populations and their ecological similarity to these occupied ponds. Ponds with water howellia are unique floodplain wetland resources that fill and drain annually from overbank flow and fluvial groundwater. Many of these wetlands are actually channel scars representing relic depressions from where the rivers used to flow, but remain connected to the hydrology of the river.

Most water howellia ponds are surrounded by riparian shrubs and trees such as black hawthorn *(Crataegus douglasii)*, thin-leaf alder *(Alnus incana)*, Pacific ninebark *(Physocarpus capitatus)*, Bebb's willow *(Salix bebbiana)*, and Drummond's willow *(Salix drummondiana)*, with some conifers around the edge. A number of ponds are lacking this surrounding riparian vegetation buffer due to land-uses and vegetation removal. Typical vegetation in these ponds includes common spikerush *(Eleocharis palustris)*, reed canarygrass, simple stem bur-reed *(Sparganium emersum)*, short-awn foxtail *(Alopecurus aequalis)*, water plantain *(Alisma plantago-aquatica)*, northern mannagrass *(Glyceria occidentalis)*, water buttercup *(Ranunculus aquatilis)*, water parsnip *(Sium suave)*, inflated sedge *(Carex vesicaria)*, duckweed *(Lemna minor)*, liverwort *(Ricciocarpos natans)*, and common rush *(Juncus effusus)*. Watching these floodplain wetlands and their plant communities evolve as the seasons change is fascinating (Figure 3). In doing work like this, you get to know your sites like old friends, with quirks that you come to expect, like excessively

buggy or thick riparian buffers, or steep edges to be walked cautiously.

Based on our sampling method, we found water howellia frequency averaged 51% during the growing season in the 14 water howellia ponds sampled. A couple of ponds had only a trace amount of water howellia, but other populations were more robust and had consistent growth throughout the pond. Reed canarygrass had invaded all but one of the ponds with a mean cover of 30%. Mean total vegetation cover in the sample quadrats was 50%. Pond size and distance to the river varied greatly, but elevation difference to the river encompassed a smaller range. During water howellia maturation, pond depth varied from 3 cm to 79 cm, with a mean of 27 cm. Depths of 150 cm were recorded in the spring season. Most ponds had some mineral soils ranging from loam to clay, with the majority of ponds containing silty clay or silty clay loam.

There were a number of important and intriguing differences regarding ponds with water howellia and those without water howellia. Ponds that had water howellia populations: (1) were 1-2 meters higher in elevation from the river compared to ponds with no water howellia; (2) had shorter hydroperiods (number of days the ponds are wetted per year) by an average of 30 days compared to ponds with no water howellia; (3) had pond substrate with lower soil bulk density (a measure of compaction and pore space in soil sample) compared to ponds with no water howellia; and (4) were more shaded (by 20-40%) compared to ponds with no water howellia.

Figure 3. C. Wiechmann and R. Hutchinson installing water depth gauges in ice-covered ponds in the spring.

Our results highlighted the unique habitat of water howellia, especially the requirement for complete inundation to grow and mature, as well as periods with no standing water during the germination season. Study results also showed that the majority of howellia-containing wetlands dry by the end of July. Those wetted longer than this do not supply suitable hydrologic regimes. We also found there may be an elevation distance to the water source that provides this specific hydrologic timing. However, other factors may also be at play as we did not assess any sub-surface water sources.

Soil factors and how they impact moisture play an important role in water howellia habitat. For example, the higher the average soil bulk density (less pore space), likely due to a combination of compaction from cattle and motor vehicles as well as soil type, the lower the frequency of water howellia. Soil water content (moisture percentage of soil) was strongly related to soil bulk density, in that soils with higher bulk densities had less moisture. Germination trials, although not statistically significant for moisture, backed up this point, that higher moisture content yielded higher germination rates. Water howellia seed is clearly susceptible to desiccation in the fall if there is not sufficient moisture. Overall, it is clear that the life cycle of water howellia depends on a hydrology regime that is "just right"—where ponds dry, but not too soon; and retain some soil moisture, but do not have standing water or soil saturation—talk about goldilocks!

Our results showed there were specific micro-habitats within water howellia ponds best suited for the species. We found the presence or absence of reed canarygrass (RCG) and water depth interacted to drive howellia presence. The frequency of water howellia consistently decreased as RCG density and cover increased, results consistent with past research in Montana. Water howellia is able to coexist and compete with RCG until a certain density threshold. Once this threshold is crossed, RCG outcompetes water howellia (Figure 4). We observed that while water howellia can grow in a range of depths ranging from very saturated soil with no standing water to 45 cm, it was most robust and has less competition with RCG at depths of 16-45 cm. Therefore, water depth is not as limiting to water howellia as competition for space, light, and nutrient resources.

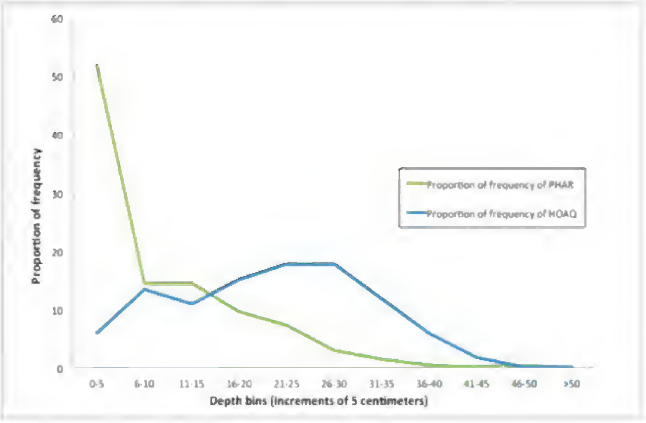


Figure 4. Graph showing relationship between reed canarygrass cover and water howellia frequency as water depth increases.

So, what do we do with all this information? Managing for a specific species is not an easy task, so it is imperative to gather the right information before management decisions are made. For water howellia,

Continued on Page 8

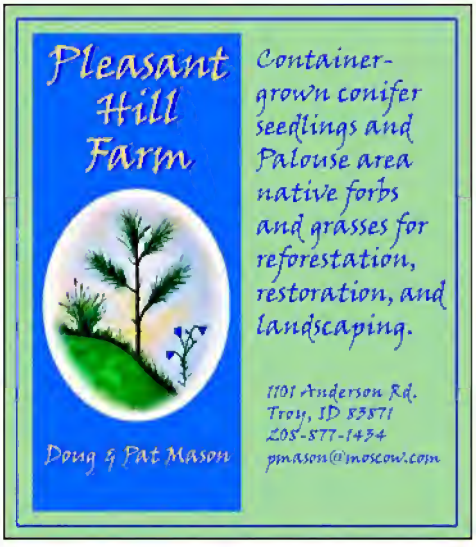
***Water howellia**.....Continued from Page 7*

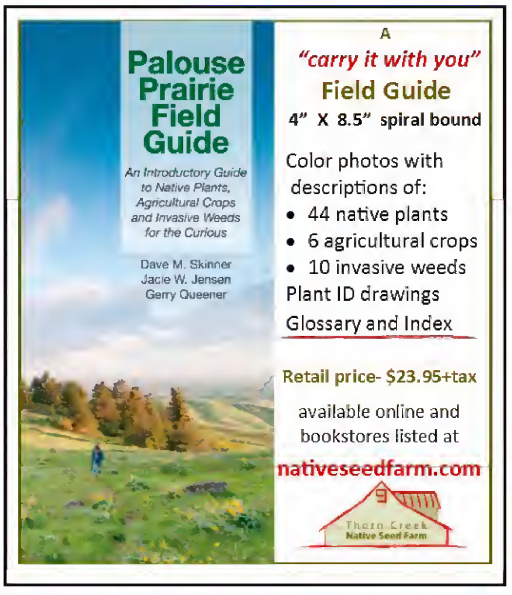
managing for RCG is a necessity. RCG invades and dominates habitat resources, and can dramatically alter site hydrology. Annual layers of the roots and stems of dense RCG stands that build up over time may decrease pond depth and change the pond's hydrologic regime. RCG's impact is not limited to water howellia, as it has been shown to take over native wetland vegetation globally. The most successful removal strategies for RCG are manual excavation or weed mats.

A proactive approach to land management in regards to wetland health is essential for water howellia's long-term viability. Keeping cattle and motorized vehicles out of occupied wetlands is important to avoid further soil compaction and hydrology alterations. Maintaining riparian buffers and replacing them where lost is important to provide shade and maintain soil moisture, stability, and wetland community structure. There are still many questions regarding the long-tern conservation of water howellia. It is easy to create excitement about grizzly bears, but not as convincing when it comes to a tiny plant most people have never seen. The presence of water howellia seems to indicate a relatively healthy, less invaded wetland system. Rare plants such as water howellia may serve as indicator species for wetland ecosystem health. We may not have all the answers yet, but with a partnership of scientists, resource managers, attentive land owners, and informed concerned citizens, the conservation of this tiny, rare aquatic plant species stands a fighter's chance. •

This study was funded by U.S. Fish and Wildlife and the National Science Foundation. Dr. Alex K. Fremeir, Associate professor at Washington State University, was my advisor. Please email cat@watershedconsulting.com with any questions!

Thorn Creek
Native Seed Farm
1461 Thorn Creek Rd, Genesee, Idaho 83832
www.nativeseedfarm.com
"We are a 4th- generation family farm where the plants and the people are deeply rooted in the heritage of the land."
Wayne and Jasie Jensen
Bringing you authentic native forb seed from the Inland Northwest grasslands.
• Source-identified and certified seed.
• Grown on the fertile fields of the Palouse.
• 20 species available in packets, by 1/4 Oz., to Lb. increments.
• Prairie mixes and custom mixes available.
Visit us at Thorn Creek Native Seed Farm:
www.nativeseedfarm.com
info@nativeseedfarm.com
(208) 596-9122


Pleasant Hill Farm
Doug & Pat Mason
Container-grown conifer seedlings and Palouse area native forbs and grasses for reforestation, restoration, and landscaping.
1101 Anderson Rd.
Troy, ID 83871
208-877-1434
pmason@moscow.com


Palouse Prairie Field Guide
An Introductory Guide to Native Plants, Agricultural Crops and Invasive Weeds for the Curious
Dave M. Skinner
Jacie W. Jensen
Gerry Queener
A
"carry it with you"
Field Guide
4" X 8.5" spiral bound
Color photos with descriptions of:
• 44 native plants
• 6 agricultural crops
• 10 invasive weeds
Plant ID drawings
Glossary and Index
Retail price- $23.95+tax
available online and bookstores listed at
nativeseedfarm.com
Thorn Creek Native Seed Farm

Native Seed Interns Collect Native Idaho Forbs for Restoration

By Lia Leibman and Jill Pavlik, Chicago Botanic Garden Conservation Land Management Program

Conservation efforts across western states have historically used non-native seed, with millions of acres planted over many decades. Non-native species have long been favored in rangeland restoration due to their established history of agricultural use. Weed invasions and wildfires continue to disrupt natural ecosystems at an ever increasing scale while planted non-natives are unable to perform important roles in the landscape. Sage-grouse have diminished greatly from their native range and pollinator species such as bees, butterflies and other insects, are all on the decline. Researchers and land managers have long identified a need to include more native forbs in restoration seedings for these and other wildlife species.

In the summer of 2017, two aspiring botanists roamed through the Boise, Payette, Salmon-Challis, and Sawtooth National Forests in search of native seed. Jill Pavlik and Lia Leibman served as Forest Service interns in partnership with the Chicago Botanic Gardens and the Conservation Land Management Program (CLM). We were stationed at the Forest Service's Rocky Mountain Research Station in Boise. Similar pairs of CLM interns were coordinated across Forest Service Region 4 and across BLM districts in Nevada.

We collected seeds from five native forb species: Douglas' dustymaiden *(Chaenactis douglasii)*, nettleleaf giant hyssop *(Agastache urticifolia)*, silverleaf phacelia *(Phacelia hastata)*, showy fleabane *(Erigeron speciosus)*, and hoary tansyaster *(Machaeranthera canescens)*. These species were chosen for their benefit to sage-grouse chicks and to pollinators. In addition, these species have wide distributions throughout the Intermountain Region, growing in a variety of habitats from low elevation desert scrub to subalpine meadows.

Douglas' dustymaiden is covered in fine woolly hairs, has fern-like leaves, and heads of tiny white disk flowers. We found this plant clinging to steep, dry hillsides on the Salmon-Challis and Boise National Forests. The seeds are narrow black achenes topped with tufts of thin, dry scales.

Nettleleaf giant hyssop is a tall, fragrant plant found in large populations along creek beds and woodland meadows throughout all four forests. This handsome plant has dark green lance-shaped leaves with clusters of white to pink flowers arranged in a spike. The seeds are tiny black nutlets that resemble poppy seeds. When collecting, we would cut off the flower clusters from the stems and the tiny seeds would pour out in abundance into our bags.

Silverleaf phacelia is a low growing plant often found with Douglas' dustymaiden. Sharp bristly hairs in the inflorescence made seed collecting a challenge. Leaves for silverleaf phacelia have distinct parallel veins and are coated in beautiful silvery hairs. The purple flowers are arranged in tight coils that resemble fiddleheads. Each flower houses one tiny seed with a unique surface texture.

Showy fleabane has heads with light purple ray flowers surrounding bright yellow disk flowers. It attracts many pollinators from the diverse habitats where it resides in all four forests. It reproduces both sexually through seed, and asexually through underground rhizomes creating dense clusters of plants. The linear to lanceolate leaves often have a slight twist and usually have short hairs on their margins. Seeds are topped by numerous long, slightly barbed hairs.

Lastly, we collected seed from hoary tansyaster, found in small clusters in sagebrush habitats on the Boise, Salmon-Challis, and Sawtooth National Forests. This forb has sticky little hairs covering the stems and leaves. Flower heads have bright purple ray flowers surrounding yellow disk flowers, adding bright pops of color to the sagebrush-steppe. Seeds are similar to showy fleabane, with numerous white hairs surrounding the seed.

As we enter 2018, plans are in the works for a new crop of interns to scout and collect seeds for additional species. In time, these seeds will help us better incorporate native forbs into major restoration projects. •

Orton Botanical Garden, Inc.

aka Plantasia Cactus Gardens

Large selection of Idaho and Great Basin native plants. Cold hardy cacti, yuccas and other succulents.

Our 5-acre drought tolerant botanical garden is open by appointment April 1 to Nov 1.

Open house and plant sale held the last two weekends in May.

867 Filer Ave W, Twin Falls, Idaho 83301

Phone: 208-734-7959, cell: 208-308-6840

Website: www.ortonbotanicalgarden.com

Email: lorton1@msn.com

Palouse Prairie Remnant Restoration

By Sarah Metcalf, White Pine Chapter

Between 2008 and 2012, the Idaho Natural Heritage Program partnered with the U.S. Fish and Wildlife Service (USFWS) to identify and survey for Palouse Prairie remnants in northern Idaho. An altered Palouse Prairie remnant at my place was one of the areas investigated as part of this project. My property is located in Idaho on the south face of Lonejack Butte, about a mile from the Washington border, approximately equidistant from the towns of Potlatch, Idaho, Garfield, Washington, and Palouse, Washington.

In the spring of 2017, a restoration project was initiated for the Palouse remnant on my property with the help of a USFWS grant and the Latah Soil and Water Conservation District. The official project consisted of 11 acres. My personal extended project included an additional 49 acres of mixed open woods and open areas.

It is super fun to go out on the hill and see what's happening in the world of plants. The discovery of a plant that is new to me is especially interesting. Sometimes it is an undesirable species such as field bindweed, red sorrel, or rush skeletonweed. Other times it is an astonishing surprise such as the beautiful greenbanded mariposa lily *(Calochortus macrocarpus)* or rare Palouse goldenweed *(Pyrrocoma liatriformis)*. Every week during the growing season is a different "plant show."

The prairie remnant on my property has never been cultivated, but has been influenced historically by logging, grazing, and trail building activities. It is too rocky and steep to be accessible to equipment which means weed control is done by hand pulling or backpack sprayer; seeding is done with a frontpack broadcaster.

In contrast to a "field conversion" project, we started out with a highly variable mixture of natives, non-natives, annuals, perennials, grasses and forbs. While both field conversions and remnant restorations are creative research endeavors, remnant restoration in particular is not amenable to a pre-formulated course of action. There is a great deal of standing around, puzzling over what to do, what to do first, waiting for inspiration, becoming overwhelmed, going away, and resuming the next day.

2017 work done in 4 select areas, about 2 acres:

1. Rake, pile, and burn all the old vegetation from the previous year so that we could see what was under it and identify plants.

2. Hand weed, rake; repeat; repeat. When the going-to-seed process started getting ahead of us, we used a weedeater, trying to avoid patches of native plants.

3. Mark and spot-spray invasive perennials with the herbicide Opensight.

4. This process resulted in a healthy, but incomplete stand of natives, with bare ground between them.

5. After fall rains arrived, we inspected again to see what non-native plant seeds might have germinated. Surprisingly, there were very few fall-germinating annual grasses. The modest number of weedy annual forbs present were spot-sprayed with Glyphosate in late fall when it was hoped that desirable native perennials would be dormant and less likely to be harmed.

6. A mixture of native grass and forb seed was broadcast, hoping to fill in between those native plant species already present.

This may sound like a lot of work, depending on your definitions of work and play. Also how much time you have, and want, to spend on it...and if you are lucky enough to have a few excellent employees.

Notes from the first season:

1. This is not a one-year project, or a 3-year project, but a 10-year project. The first year is for figuring out how to do it—an ongoing process.

2. This past spring I entirely missed the opportunity to control bulbous bluegrass *(Poa bulbosa)*. It was up, dropping bulblets, and dormant almost immediately. Late this fall we marked a test area where the bulbous bluegrass was greening up and spot sprayed it with Glyphosate, trying to avoid the bluebunch wheatgrass, which hopefully was dormant anyway. It took about 10 days, but the bulbous bluegrass finally turned yellow. It will be interesting to see if it is truly dead this next spring.

3. In some places what I had assumed to be ventenata *(Ventenata dubia)* was actually bulbous bluegrass. Worse, in my opinion, but good to know because different control methods are needed. Fall-germinating annual grasses can be nicely controlled by pulling them up before they go to seed. They are easy to pull, whereas bulbous bluegrass is not. If it can be killed with Glyphosate in the late fall when all else is dormant, then that is going to be my choice.

4. The prairie remnant has billions of small-flowered cranesbill *(Geranium pusillum)* plants, a tiny non-native annual. It was initially very confusing to identify because the seedlings look a lot like prairie star *(Lithophragma* sp.*)*. In many areas, it forms a solid ground cover between individual native plants and is hard to pull up because of its tiny size. I set up two experiments. One

compared a patch of small-flowered cranesbill sprayed with Glyphosate in late fall, a similar patch dug up with a weeding tool (which was easy after fall rain), and a control patch. I am really curious to see how well this fall-germinating annual survives the winter, and if the late fall Glyphosate application kills it. The second experiment compared a patch of small-flowered cranesbill over-seeded with native grasses, a patch over-seeded with vigorous native forb species (yarrow, blanketflower, Oregon sunshine), and a control patch. I am wondering if the perennials might be able to overwhelm and replace the small-flowered cranesbill.

It would be fun if those of us who have been entrusted with a Palouse Prairie remnant could get together to compare notes and go for plant walks. And maybe trade seeds too. I would be happy to lead some walks out here at Lonejack Butte. Feel free to contact me at smetcalf@moscow.com. •

Plant species list for the restoration project area

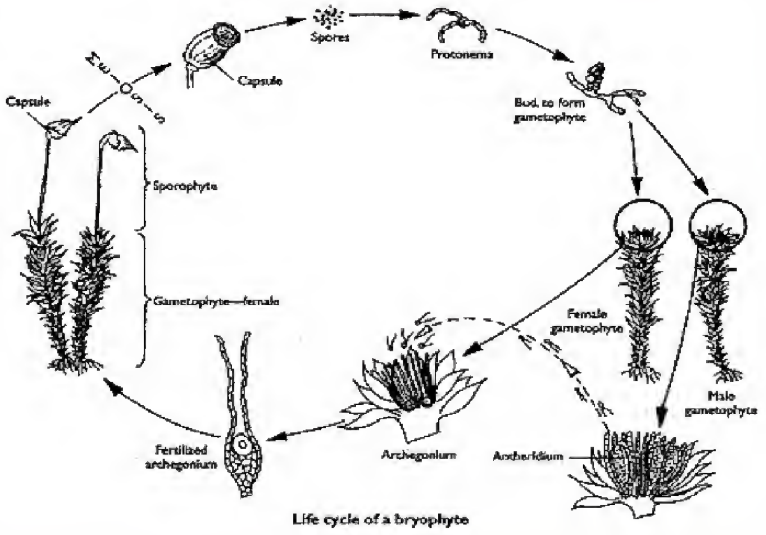
Scientific name	Common name	Scientific name	Common name
Native grasses		*Ranunculus* sp.	buttercup
Danthonia californica	California oatgrass	*Senecio integerrimus*	western groundsel
Elymus glaucus	blue wild rye	*Senecio serra*	tall butterweed
Festuca idahoensis	Idaho fescue	*Solidago missouriensis*	Missouri goldenrod
Pseudoroegneria spicata	bluebunch wheatgrass	*Symphyotrichum spathulatum*	western aster
Koeleria macrantha	prairie junegrass	*Thalictrum occidentale*	western meadowrue
Native perennial forbs		*Triteleia grandiflora*	large flowered triteleia
Achillea millefolium	western yarrow	*Veratrum californicum*	false hellebore
Agoseris grandiflora	mountain dandelion	*Viola adunca*	hookspur violet
Allium sp.	wild onions	*Zigadenus venenosus*	death camas
Antennaria luzuloides	woodrush pussytoes	**Native annual forbs**	
Antennaria rosea	rosy pussytoes	*Gallium aparine*	sticky bedstraw
Apocynum androsaemifolium	spreading dogbane	*Madia gracilis*	mountain tarweed
Balsamorhiza sagittata	arrowleaf balsamroot	*Epilobium brachycarpum*	tall annual willowherb
Besseya rubra	red besseya	*Collinsia parviflora*	blue-eyed mary
Calochortus macrocarpus	greenbanded mariposa lily	*Collomia grandiflora*	grand collomia
Chamerion angustifolium	fireweed	**Non-native perennial grasses**	
Clarkia pulchella	pink fairies	*Poa bulbosa*	bulbous bluegrass
Claytonia lanceolata	spring beauty	*Poa pretensis*	Kentucky bluegrass
Clematis hirsutissima	sugar bowls	*Arrhenatherum elatius*	tall oatgrass
Claytonia perfoliata	miner's lettuce	*Bromus inermis*	smooth brome
Delphinium nuttallianum	Nuttall's larkspur	*Dactylis glomerata*	orchardgrass
Erythronium grandiflorum	glacier lily	**Non-native annual grasses**	
Frasera albicaulis	shiny frasera	*Ventanata dubia*	ventanata
Fritillaria pudica	yellow bells	*Bromus brizaeformis*	rattlesnake brome
Galium boreale	sticky purple geranium	*Bromus tectorum*	cheatgrass
Geranium viscosissimum	northern bedstraw	*Bromus japonicus*	Japanese brome
Geum triflorum	prairie smoke	**Non-native perennial forbs**	
Helianthella uniflora	little sunflower	*Chondrilla juncea*	rush skeletonweed
Hydrophyllum capitatum	ballhead waterleaf	*Convolvulus arvensis*	field bindweed
Hieracium scouleri var. *albertinum*	western hawkweed	*Hypericum perforatum*	St. Johnswort
Iris missouriensis	western iris	*Linaria vulgaris*	yellow toad flax
Lithophragma glabrum	bulbous woodland star	*Plantago lanceolata*	English plantain
Lithophragma parviflorum	woodland star	*Potentilla recta*	sulfur cinquefoil
Lithosperum ruderale	western stoneseed	*Rumex acetosella*	red sorrel
Lomatium dissectum	fernleaf biscuitroot	**Non-native annual/biennial forbs**	
Lomatium gormanii	Gorman's biscuitroot	*Centaurea cyanus*	bachelor buttons
Lomatium triternatum	nineleaf biscuitroot	*Valerianella locustra*	cornsalad
Lupinus sp.	lupine	*Vicia villosa*	hairy vetch
Mertensia longiflora	longflower bluebells	*Geranium pusillum*	small-flower cranesbill
Olsynium douglasii	grass widow	*Galium divaricatum*	wall bedstraw
Penstemon sp.	penstemon	*Lactuca serriola*	prickly lettuce
Perideridia gairdneri	Gairdner's yampah	*Sanguisorba annua*	prairie burnet
Potentilla glandulosa	sticky cinquefoil	*Sisymbrium altissimum*	tumblemustard
Potentilla arguta	tall cinquefoil	*Tragopogon dubius*	salsify
Potentilla gracilis	slender cinquefoil		
Pyrrocoma carthamoides	Columbia goldenweed		
Pyrrocoma liatriformis	Palouse goldenweed		

Spring Brings Bryophytes

By Alma Hanson, White Pine Chapter

Spring with its frequent rain showers provides an opportunity to seek out the diminutive world of bryophytes. Bryophytes collectively include the mosses, liverworts and hornworts. They really put on a show in early spring when the leaves and stems of these nonvascular plants expand in the abundant moisture.

The *Flora of North America North of Mexico* lists about 1900 bryophyte species. With 1402 species, mosses far outnumber the liverworts and hornworts. A search of The Consortium of Pacific Northwest Herbaria shows 611 moss species and subspecies in Idaho. I have a moss checklist of about 500 species that I think have a high probability of occurring in Idaho. While putting names on the bryophytes you encounter this spring can certainly be challenging, taking time to identify the dominant species will be rewarding and opens up a whole new world. To keep the challenge fun and doable, start with trying to identify some of the large dominant mosses.



Drawing of the moss life cycle (https://www.fs.fed.us/database/feis/-plants/bryophyte/poljun/all.html)

One of my favorite mosses is *Polytrichum junipernum* or the hair cap moss. It was a specimen given to me by Dr. Doyle Andregg, a lichenologist and head of Biological Sciences at the University of Idaho back in the 1970s. I had just asked him to be my major professor on a project exploring the relationship of Daubenmire forest habitat types and moss communities. By giving me a real specimen to identify, I think he was quietly testing my tenacity. It took me days to key that moss and was the first of many hours of keying as I worked to complete a MS under his direction.

You can find hair cap moss in drier sites from sea level to high alpine. Besides being the first moss I identified, the hair cap moss became my poster moss for teaching rudimentary terminology. The gametophyte (haploid) part of the plant contains the green leaves and stems; the sporophyte (diploid) part of the moss contains the capsule, spores and hairy calyptra that gives the moss its common name. The parts of this moss are big enough to observe under a hand lens and beautiful enough to compete with any flowering plant. Hair cap moss regenerates sexually from spores and asexually by fragmentation of plant parts or by small buds. Several other species in the genus *Polytrichum* occur in the Pacific Northwest region. Some such as *P. strictum* are rare, occurring mostly in boreal forests. Specimens of *P. strictum* have been collected from sphagnum bogs in Washington and Oregon, but it has not been reported from Idaho.

The life cycle of bryophytes differs from flowering plants. In flowering plants, the dominant organism is diploid with two sets of chromosomes. But in bryophytes the haploid state is dominant and capable of living independently. This haploid stage contains only one set of chromosomes. Lacking a sophisticated vascular system for transporting water and nutrients, mosses rely on capillary spaces to move water and operate much like a sponge.

If you decide to start collecting and identifying mosses, there are a few things beside your hand lens that you'll find helpful. First, buy some plain brown bags, the kind used for a sack lunch. Use these bags for your collections. Moss collections need no special pressing or care in the field. Just be sure the mosses dry out in the paper bags so they don't rot. When you get back home and want to identify your bryophyte, take a dry specimen and add some water to revive the plants. Secondly, buy a common field guide to bryophytes like, *Mosses, Lichens and Ferns of Northwest North America*, 1988, by D.H. Vitt, J.E. Marsh, and R.B. Bovey. If you want a newer book that gently introduces you to mosses through pictures and keys try *Common Mosses of the Northeast and Appalachians*, 2013, by K.B. McKnight, J.R. Rohrer, W.J. Perdrizet, and K. McKnight Ward. Even though this book addresses eastern mosses, many of the same genera occur in the Pacific Northwest and the pictures and keying tips are worth the investment. As it states at the end "this book is an invitation to slow down, to look closely and to...come to love some of nature's smallest plants." Then for the hard core

bryologists, there are volumes 27, 28 and 29 of the *Flora of North America* that cover nearly 1900 species of North American bryophytes. Lawton's, 1971, *Moss Flora of the Pacific Northwest* and Flowers' *Mosses: Utah and the West*, 1973, also provide good drawings and distribution information useful for identification.

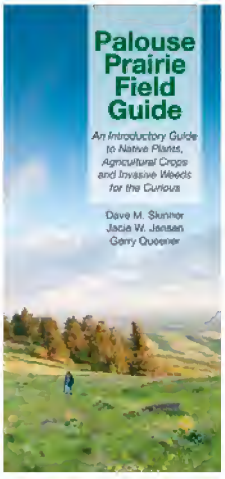
Before you start collecting in earnest be sure and check the Idaho Native Plant Society Rare Plant List tracked by the State Heritage Program of the Idaho Fish and Game https://idahonativeplants.org/rare-plants-list/. Bryophytes in the list have conservation concerns and permission may be required before collecting them on National Forests and Grasslands. If you don't get around to collecting bryophytes this spring, don't worry. Most of the bryophytes in Idaho are perennials so you can collect them anytime they are not buried in snow! •

Hair cap moss

Book Review

Palouse Prairie Field Guide. An introductory guide to native plants, agricultural crops and invasive weeds for the curious. By Dave M. Skinner, Jacie W. Jensen and Gerry Queener. Published by Thorn Creek Native Seed Farm, 2016.

The Palouse Prairie is a very rare grassland habitat that has several species rarely included in other plant guides. Palouse Prairie remnants and shrubby "eyebrows" have a wide mix of forbs, grasses, and shrubs that have long needed their own plant guide. The *Palouse Prairie Field Guide* fills this need excellently. It provides wonderful photographs, habitat descriptions, native range, bloom period, and even a guide for similar species. Plant descriptions are easy to understand and well-written. I would recommend this guide to anyone interested in Palouse Prairie vegetation. The format is based on flower color, which is handy for blooming plants. Fortunately, the second printing now includes both common name and scientific name indices. — *Judy Ferguson, plant ecologist, Moscow, Idaho*



The *Palouse Prairie Field Guide* is an excellent and accessible guide for users of all botanical knowledge levels. The guide is arranged by flower color making field identification quick and easy during the plant's flowering periods. I appreciate having a guide that is specific to our region to recommend to landowners and plant enthusiasts on the Palouse. This field guide is sized for convenient field use, but its beautiful color photos and detailed plant descriptions are enjoyable to peruse at any time, indoors or out. — *Brenda Erhardt, Latah Soil and Water Conservation District, Moscow, Idaho*

I have used the *Palouse Prairie Field Guide* constantly and would be lost without it as I slowly learn to identify the plants. It helped immensely when I was able to procure an index which folded neatly into the shape of the guide and can be carried inside it. Grouping the plants by color rather than taxonomy is a huge help, and the other notes lend much-appreciated background information for each species. — *James Sayre, Palouse Prairie landowner with a restoration project*

This *Palouse Prairie Field Guide* is dedicated to our wonderful friend, David M. Skinner, with whom we had the pleasure to work until his death on January 28, 2016.

He was a botanist and farmer in heart and practice. Dave provided most of the native plant information and many of the photos for this guide. His extensive knowledge of Palouse Prairie plants, agricultural crops and plants in general made a daunting task much easier. We will remember him for generously sharing his knowledge with all who expressed an interest in plants, especially native plants.

Dave was always approachable and encouraging to others when they had questions about growing and using native plants. He strongly promoted the use of natives in our private home and public building landscapes, as well as maintaining and restoring native Palouse Prairie. Plants were Dave's life, and our world is a richer, more diverse place because of him and his life's work. Each time we use this guide, we will fondly remember him. We hope you will, too. — *Jacie Jensen and Gary Queener* •

INPS Chapter News

CALYPSO CHAPTER

When: Meetings are the first Wednesdays of March, April, May and October at 7:00 pm. Field trips take place during the spring, summer, and early fall months.
Where: Meeting are held in the conference room of Idaho Department of Fish and Game, 2885 W. Kathleen Ave., Coeur d'Alene
Contact: Derek Antonelli, ds.ca.antonelli@gmail.com

LOASA CHAPTER

When: Meetings are held the third Thursday of each month at 7:00 pm.
Where: Taylor Building, Room 248, College of Southern Idaho, Twin Falls.
Contact: Bill Bridges, bridgesbill34@yahoo.com

PAHOVE CHAPTER

When: Meetings are held on the second Tuesday of each month from September-April at 7:00 pm. Dates, times, or topics are occasionally subject to change. Upcoming meeting information is sent to members via postcard and/or email. Events are also posted on the Pahove Chapter page of the INPS website: http://idahonativeplants.org/local-chapters/pahove/
Where: The MK Nature Center Auditorium, 600 S. Walnut Street, Boise.
Contact: For more information about Pahove Chapter activities please visit the Pahove Chapter page on the INPS website, or email Karie Pappani at pahove.chapter.president@gmail.com
Board Position Opening: Pahove chapter is seeking a new board president. Current president, Karie Pappani, has served the chapter exceptionally for 6+ years, and the time has come to select her successor. Interested individuals are encouraged to contact the board at pahove.chapter.president@gmail.com
Upcoming events:
March 13: Roger Rosentreter discussed plant palatability and wildlife, with an emphasis on sage grouse.
April 10: Leon Powers presents "Phantom of the Opterans: Idaho's tiniest and least-known owl."
April 27-28: Pahove Native Plant Sale
Our annual plant sale will be held at the MK Nature Center, 600 S. Walnut St., Boise, on Friday, April 27, 5-7 pm (Members Only) or Saturday, April 28, 10 am-1 pm (Public Sale). Pahove's annual plant sale encourages people across the Treasure Valley to enhance their yards and gardens by making hundreds of native plants available for sale. Pahove also uses this event to help educate the public on the value of native plants and the habitat they provide for bees, birds, and other wildlife. Proceeds benefit the Pahove Chapter and MK Nature Center.
May 12: Wildflower Show
Pahove Chapter will host a Wildflower Show at the Foothills Learning Center, 3188 Sunset Peak Rd., Boise. Participants will learn about our local flora, including how to identify the wildflowers of the Boise Foothills and the weeds that accompany them.
May 22: Field Trip to Orton Botanical Garden
Pahove members are invited to enjoy a guided tour of Orton Botanical Garden in Twin Falls. The one-day bus trip for $25 will feature presentations by members Ann DeBolt, Roger Rosentreter, and others. Cacti, succulents, and native plants will be available for purchase. See the Pahove Chapter page on the INPS website for registration details. Also, Orton Botanical Garden has a new, interactive web site. Check it out: www.ortonbotanicalgarden.com. Among other things, the new website allows you to purchase plants online, instead of having to download an order form and mail it in.
Pahove Donates To Four Idaho Herbaria
In October 2017, the Pahove Chapter used Plant Sale profits for gifting $1000 to each of the four Idaho herbaria participating in the annual Idaho botanical foray: Boise State University's Snake River Plains Herbarium, the College of Idaho's Harold M. Tucker Herbarium, Idaho State University's Ray J. Davis Herbarium and University of Idaho's Stillinger Herbarium.
The very appreciative herbaria directors indicated quite differing plans for spending these discretionary funds, such as for student conference travel expenses, for materials to mount specimens, and other varied and necessary operational expenses. They'll itemize expenditures in future reports to Pahove. The chapter is grateful to have continuing member support at our annual native plant sale. Because of this, Pahove was able to financially assist our state's herbaria, aiding them to preserve the knowledge contained in their botanical specimens.

SAWABI CHAPTER

When: The Sawabi Chapter invites all to its fall/winter programs held on the first Monday of the month at 7 pm. Before each main speaker, Dr. Karl Holte will do a brief presentation about "The Plant Family of the Month." Refreshments are available after the meeting.
Where: The North Fork Room (3rd floor) in the Earl Pond Student Union Building on the Idaho State University in Pocatello. Meeting starts at 7 pm.

Contact: Karl Holte at plantprof@live.com; (208) 241-8358.

Upcoming events:

April 2: Sawabi Chapter Annual Meeting

UPPER SNAKE CHAPTER

The Upper Snake Chapter is currently inactive.

Contact: Rose Lehman, jojorose@cableone.net

If anyone is interested in reviving the chapter, they are welcome to contact Rose.

WHITE PINE CHAPTER

When: Meetings are held once a month except during the summer. Field trips can occur most any month. Please check the chapter website at www.whitepineinps.org for events which may be scheduled or finalized after *Sage Notes* is printed; or email the chapter officers at whitepine.chapter@gmail.com

Where: Great Room of the 1912 Building, 412 East Third St. in Moscow (between Adams and Van Buren) at 7 pm.

Contact: INPS, White Pine Chapter, PO Box 8481, Moscow, ID 83843 or whitepine.chapter@gmail.com

Upcoming events:

Find additional events on our website calendar.

April 14: Nisqually John Canyon Field Trip

The White Pine Chapter is planning an early spring field trip in April led by Steve Bunting to the Nisqually John Canyon Wildlife Habitat Management Unit which is an area managed by the US Army Corps of Engineers adjacent to Lower Granite Reservoir. The low elevation grassland area is over 3500 acres in size and dominated by bluebunch wheatgrass. The canyon setting provides for variety of habitats. Because of the low elevation, it is one of the earliest areas in our region where spring appears. Arrowleaf balsamroot, biscuitroots, sego lilies, and a variety of spring annuals are common early spring plants. Nisqually John Canyon WHMU is located along Washington State Highway 193 (Wawawai Road) about 15 miles west of Lewiston. Camping is available nearby at Blyton Landing and Nisqually John Landing. Additional details: http://www.whitepineinps.org/WPschedule.html

April 19: Two Idaho Rare Plants, Idaho Phlox (*Phlox idahonis)* and Water Howellia *(Howellia aquatilis)*. Juanita Lichthardt will discuss two of our favorite rare plant species, Idaho phlox and water howellia. She will provide updates on survey results and the status of populations.

May 19: White Pine Chapter Native Plant Sale

Come join us for the White Pine Chapter Native Plant Sale on Saturday, May 19, at 9:00 am, at the 1912 Center, Arts Room, 412 East Third St. There will be some annuals, many perennials, and some trees and shrubs. Whether you have a garden bed needing a few plants to tuck in here or there or a larger area you are replanting with Palouse Prairie natives, you'll find an assortment of native plant species to fit your needs. Have questions about which natives to plant? Come and talk to our Palouse Prairie native experts.

May 12 & June 9: Steptoe Butte Botany Blitz

Do you like science, plants, the outdoors? Mark your calendar for the Steptoe Butte Botany Blitz on May 12 or June 9, 8 am-4 pm. James Riser, Botanist for Palouse Conservation District, invites you to help local botanists collect plant specimens while surveying Steptoe Butte's plant diversity. Drinks and snacks will be provided. Carpool locations and further details will be listed at a later date. Sponsored in part by the White Pine Chapter. Updates will appear on www.facebook.com/SteptoeButteBotanyBlitz

WOOD RIVER CHAPTER

When: Meetings are held various weekday evenings beginning at 7:00 pm.

Where: Meetings are held at the Sawtooth Botanical Garden, located three miles south of Ketchum, on Highway 75 and Gimlet Road.

Contact: Cynthia Langlois at cplangloisACRP@msn.com for information about field trips and presentations. Also, check the Sawtooth Botanical Garden website: sbgarden.org for updates on presentations. •

Do you like science? Plants? The outdoors?
If so, come join us for the...
Steptoe Butte Botany Blitz!
JOIN US! Come spend the day helping local botanists collect plant specimens while surveying Steptoe Butte's plant diversity!
No experience necessary!
Come prepared for a day out in the field.
When: Two opportunities to participate!
May 12th & June 9th
Time: 8AM – 4PM
Where: Steptoe Butte - lower cell towers pull out
Cost: FREE! Drinks & snacks provided
Contact:
James Riser at botanist@palousecd.org
For more information and updates visit:
www.facebook.com/SteptoeButteBotanyBlitz

IDAHO NATIVE PLANT SOCIETY
PO Box 9451, Boise, ID 83707
www.idahonativeplants.org
ADDRESS SERVICE REQUESTED

Find us on: facebook

Be sure to renew for 2018!

Idaho Native Plant Society Membership Form

Name _____

Address _____

City/State _____ *Zip* _____

Phone _____ *E-Mail* _____

Chapter Affiliation:

- ☐ Calypso (Coeur d'Alene)
- ☐ Loasa (Twin Falls)
- ☐ Pahove (Boise)
- ☐ Sawabi (Pocatello)
- ☐ Upper Snake (Idaho Falls)
- ☐ White Pine (Moscow)
- ☐ Wood River (Ketchum/Sun Valley)
- ☐ No Chapter

Membership Level:

- ☐ New ☐ Renewal
- ☐ Senior $10
- ☐ Student $10
- ☐ Individual $17
- ☐ Household $22
- ☐ Sustaining $35+
- ☐ Patron $100+

I would prefer to receive ***Sage Notes***: ☐ Print ☐ Electronic ☐ Both

Send completed form and full remittance to:
Idaho Native Plant Society
P.O. Box 9451
Boise, ID 83707

Memberships run calendar year. New memberships enrolled after June 1 include the following year. ***Renew or join online:*** *https://idahonativeplants.org/membership/*

Sage Notes is published quarterly by the Idaho Native Plant Society. Past issues can be viewed online at: http://idahonativeplants.org/sage-notes/

Submissions: Members and non-members may submit material for publication. Relevant articles, essays, poetry, news, announcements, photographs and artwork are welcome. Authors, artists and photographers retain copyright to their work and are credited in *Sage Notes*. Send all submissions electronically to the editor at the link below. Please provide a phone number and/or email address with your submission. Submission deadlines are January 8, April 1, August 1 and November 1.

Advertising: Advertisements help reach environmentally-minded, native plant-loving customers and help support INPS. Prices: 1/8 page = $5, 1/4 page = $8, 1/2 page = $15. Submit ads electronically to the editor (JPG, TIFF, PSD or PDF files). Send payment to: Sage Notes Ads, P.O. Box 9451, Boise ID 83707.

Editor: Michael Mancuso, sage-editor@idahonativeplants.org

Vol. 40 No. 2 June 2018

Sage Notes

Newsletter of the Idaho Native Plant Society • Promoting Interest in Idaho's Native Flora

2018 INPS Rare Plant Conference

By Beth Corbin, Pahove Chapter

The 28th Idaho Rare Plant Conference (RPC) was held in Boise on February 27–March 1, 2018. Conference coordinator Rose Lehman and her able RPC planning committee did a fabulous job to pull everything together for a splendid conference. We had 54 registrants, from a variety of agencies, companies, universities, a tribe, and other affiliations. One of the roles of INPS is to maintain and periodically review and update the Idaho Rare Plant List. The Idaho RPC is the venue where this gets done.

The conference started with a welcome from INPS president Steve Love, an introduction to our featured plant (the newly published Salmon River Mountains penstemon) by Janet Bala, and an interesting keynote talk about rare plants on Palouse Prairie remnants on Nez Perce Tribal Lands by Angela Sondanaa. Next, we had informative agency updates from U.S. Fish and Wildlife Service (Karen Colson), Idaho Department of Fish and Game (Lynn Kinter), BLM (Anne Halford), and U.S. Forest Service (Jennifer Brickey & Brittni Brown).

Conservation talks included an investigation of potentially rare milkweeds in Idaho (Kinter), the Global Observation Research Initiative in Alpine Environments (with the charming acronym GLORIA, by Mike Mancuso, introduced with song and dance to the Van Morrison song), Alpine *Potentilla* in Idaho (Barbara Ertter), and National Vegetation Classification (Steven Rust). Announcements for upcoming events included an update on an Idaho Native Plant Garden Guide (Holly Hovis & Colson), notice of the INPS annual statewide meeting (Coeur d'Alene, Jun 29–July 2, 2018) and Idaho Botanical Foray (near Fairfield, May 31–June 4, 2018).

Rare Plant Ranking is a large part of the RPC. This year we presented a record 82 plant taxa for conservation ranking or discussion, thanks to the hard work of Rare Plant Working Group (RPWG) members. I gave a short overview of the ranking process that we use based on the NatureServe rank calculator. We then jumped right into ranking presentations, beginning with the Northern Idaho RPWG, under the tireless work of Derek Antonelli. The Southern Idaho RPWG presentations followed. For each plant, a short summary of the RPWG's research findings on abundance, distribution, condition, and threats was presented, along with a recommended State conservation rank. After a short group discussion (for questions or additional information) a consensus rank was voted upon. Out of the total plant species presented, 31 were newly ranked and maintain Rare status; 15 were ranked and new additions to the Rare list; 13 were ranked and moved from Review to Rare status; 4 previously ranked Rare plants

Continued on Page 4

In this issue:

2018 INPS Rare Plant Conference....1
Letter from the President....2
Announcements....3
Lucky Peak Nusery Pollinator Garden....6
Western Soc. of Weed Science Annual Meeting....10
Book Review....11
Pahove's First Wildflower Show....12
Memorium: Janet Benoit....13
Chapter News....14

IDAHO NATIVE PLANT SOCIETY
PO Box 9451, Boise, ID 83707
www.idahonativeplants.org
public3@idahonativeplants.org

INPS BOARD
President: Stephen Love
Vice-president: Tony McCammon
Secretary: Janet Bala
Treasurer: Karen Getusky
Past-president: LaMar Orton
Member-at-Large: Mel Nicholls
Chapter Presidents

CALYPSO CHAPTER
821 W. Mustang Ave.
Hayden, ID 83835
President: Derek Antonelli
Vice President: Vacant
Secretary: Karen Williams
Treasurer: Vacant
Newsletter: Vacant

LOASA CHAPTER
340 E 520 N.
Shoshone, ID 83352
President: Bill Bridges
Vice President: Valdon Hancock
Secretary/Treasurer: Lois Rohay

PAHOVE CHAPTER
PO Box 9451, Boise, ID 83707
pahove.chapter@gmail.com
President: Karie Pappani
Vice President: Vacant
Secretary: Daniel Murphy
Treasurer: Caroline Morris

SAWABI CHAPTER
1506 N. Mink Creek Road
Pocatello, ID 83204
Co-Pres: Karl Holte and Paul Allen
Vice President: Geoff Hogander
Secretary: Barbara Nicholls
Treasurer: Ruth Moorhead

UPPER SNAKE CHAPTER
Currently Inactive

WHITE PINE CHAPTER
PO Box 8481, Moscow, ID 83843
whitepine.chapter@gmail.com
President: Judy Ferguson
Vice President: Pam Brunsfeld
Secretary: Bettie Hoff
Treasurer: Susan Rounds

WOOD RIVER CHAPTER
PO Box 3093, Hailey, ID 83333
President: Cynthia Langlois
Vice President: Lisa Horton
Secretary: Jeanne Cassell
Treasurer: Carol Blackburn

Letter from the President

I recently spent several days in the Owyhee Mountains and Canyonlands of southwestern Idaho on a plant collection foray. This is a floristically fascinating part of the state. The region represents a convergence of Pacific, Great Basin, and Northern Rocky Mountain floras. As a result, habitats of the area contain an unusual combination of plants that include many rare or uncommon species. It was a gold mine of exceptional plants for research and my colleagues from partner universities and I collected over 200 stem cuttings that we will use to evaluate ornamental utility. The foray was very successful and time spent outdoors was good for my soul, especially given the limitations of my health during the past two years.

The Owyhee region exhibits complex interactions between humans and nature. The land is a patchwork of small wilderness areas, public lands (mostly BLM), Indian reservation, and privately owned parcels. Human influence has a long history in this region and has been more or less destructive to natural systems, especially the rampant mining, continuous grazing which has periodically been managed poorly, and the introduction of invasive plant species (particularly cheatgrass). As a result, much of the land is seriously degraded, especially in the area known as the Owyhee Front between the Snake River and the highest peaks of the Owyhee Mountains. On the other hand, there are some pristine lands in the southern Owyhee Canyonlands. Additionally, the area is receiving attention from both public and private land managers, with progress beginning to be made toward conserving the resources remaining and restoring some of the most degraded places. This unique landscape is definitely worth defending and has the potential to result in the creation of new models for conservation that involve a combination of public policy and private landowner efforts. It will be interesting to see what the future brings to the region.

One more thing before I end this letter. I hope you are planning to attend the INPS Annual Meeting at Bumblebee Campground near Coeur d' Alene. There is still time to make arrangements. The Calypso Chapter, led by Derek Antonelli, has put together an outstanding program. Come, rub shoulders with like-minded people and see a beautiful part of our state.

Stephen Love,
INPS President

Achnatherum hymenoides.
Illustration by Karie Pappani, June 2018.

2018 INPS Online Photo Contest

Enter the 2018 INPS online photo contest! We hope this contest will serve as a medium to enhance and share the beauty and diversity of Idaho's floral heritage.

Who may submit photos? Anyone other than a professional photographer may submit photographs. This person need not be an INPS member or even a resident of Idaho. Photos will only be accepted from the photographer who took them. There is no limit to the number of photos that may be submitted.

What are the start and end dates? Photos will be accepted from the first of each year until September 30 of that same year.

What types of photos are acceptable? INPS will only accept photos taken in Idaho of plants native to Idaho. No ornamentals please. Entries are required to have been taken during the contest year.

Calochortus nuttallii.
2017 INPS Photo Contest Winner.
Photo by Jordan Allen.

How are photos judged? There are no specific criteria or categories for winning photographs. Winners are identified solely upon the number of "Likes" tallied on the INPS Facebook page. Only INPS members in good standing may vote. Voting will begin October 1 and end October 31 each year. There may be an "Editor's Choice" award as well. The board of the Sawabi Chapter of the INPS will arbitrate any dispute.

How do I submit a photo entry? Post your entry to the comments section of the 2018 INPS Photo Contest Folder on the INPS Facebook page. Click on Photos > Albums (https://www.facebook.com/pg/IdahoNativePlants/photos/?tab=album&album_id=1901972986543402). Please provide the location, time of year, and tentative identification, if possible.

How might my photos be used? Your photos may be used as part of the image library (to be housed on the INPS website), in education and outreach materials, in Sage Notes, and in future calendars. The photographer will retain the copyright of images he or she submits. INPS will have the right to use the images submitted in documents promoting Idaho native plants.

Prizes? The recognition of your peers should be enough! However, if this contest receives adequate interest, there may be a free calendar for the top three entrants.

ERIG needs YOU!

Want to help INPS support great projects? The Education, Research, and Inventory Grant (ERIG) program relies on funding from various sources such as memberships, workshops, and private donations. If you, your business, or your employer would like to make a donation to INPS to help keep the ERIG program successful, send your tax deductible donation to: ERIG Program, INPS P.O. Box 9451, Boise Idaho 83707. Checks should be made out to INPS. Please be sure to specify that your donation is to be used for ERIG projects. Or, you can make a secure online payment using PayPal on the INPS website. Thank you for your help!

Interested in applying for an ERIG? More information on how and when to apply is available at https://idahonativeplants.org/erig-news/.

were updated; 8 plants were dropped from the Review list; 2 were dropped from the Rare list; 6 were considered for adding but not added; and 3 plants on the list were discussed but not ranked (see Table 1). We always encourage people to participate in the RPWGs between RPCs as this greatly improves the quality of our information. The RPC highlights the transparent process upon which the Idaho Rare Plant List is based, helping to keep the list a relevant conservation tool. The updated Idaho Rare Plant list will be posted to the INPS website shortly.

Ah, but the RPC wasn't all serious work. We took the opportunity to catch up with old friends, make new ones, and network. We got great tote bags with a Salmon River Mountains penstemon logo; presenters also got a small INPS waterproof bag. We enjoyed excellent break snacks and continental breakfasts on site at the Washington

Beth Corbin presents Juncus brevicaudatus. Photo Lynn Kinter.

Group Plaza. We gathered for a casual social at the Reef Restaurant in downtown Boise on Tuesday night, and a social, Ethiopian dinner, and talk about Sagebrush Steppe by Eric Yensen at the MK Nature Center on Wednesday night. A Primrose Hill field trip, planned for Thursday afternoon, was unfortunately snowed out.

We wrapped up the RPC with an open discussion for critique, next steps, and recommendations. Some items discussed include recommendations for the Idaho Natural Heritage Program (since IDFG is reorganizing and cutting botanist positions), desire for a Rare Plant Species field guide or application (brainstormed potential ideas), and volunteer recruitment from groups such as the Master Naturalists. No one has yet stepped forward to coordinate the next RPC, but Rose may appoint someone.

Many thanks to Rose Lehman for her leadership for this conference! A partial list of RPC planning committee members and their accomplishments include Caroline Morris (registration, treasurer, dinner coordinator), Susan Ziebarth (handout packets, artwork layout,

Audience participates in a session. Photo Lynn Kinter.

nametags, tables, poster easels), Janet Bala (coordinating conservation speakers & poster, arranging for *Penstemon salmonensis* artwork), Carol Prentice (bags), Karie Pappani (website posting and INPS coordination), Anne Halford (venue reservation, parking), Lynn Kinter (Reef reservation), Barbara Ertter (dinner speaker coordination), Derek Antonelli and me (RPWG coordinators). Special thanks to all the RPWG members who presented plants (Derek Antonelli, LeeAnn Abell, Blair McClarin, Juanita Lichthardt, Jennifer Miller, Ertter, Kinter, Prentice, Jim Strickland, Morgan Cheyney, Halford, Pappani, Jody Hull, Corbin, Lehman, and Lisa Harloe). Thanks also to those scribes who took notes for the ranking process: Colson, Abell, Brickey, Trish Winn, and Gillian Wigglesworth. It definitely takes a village to pull the RPC together, and this is one well-oiled machine! •

Rose Lehman, Steve Love, Derek Antonelli, and Beth Corbin are recognized for their contributions to making this year's RPC a success. Photo Lynn Kinter.

Table 1: Results of the 2018 Rare Plant Conference

Newly Ranked, maintain RARE:	**Rank**
Angelica kingii	S1
Antennaria arcuata	S1
Astragalus atratus var. *inseptus*	G4G5T3+ S3
Blechnum spicant	S3
Blepharidachne kingii	S1
Carex rostrata	S3
Cephalanthera austiniae	S3
Chaenactis stevioides	S2
Crepis bakeri ssp. *idahoensis*	S1
Cypripedium fasciculatum	S3
Cypripedium parviflorum var. *pubescens*	S1
Dasynotus daubenmirei	G2+S2
Dodecatheon dentatum	S3
Downingia bacipalupii	S2
Epipactis gigantea	S2S3
Eriogonum calcareum var. *calcareum*	S3
Machaerocarpus californicus	S2S3
Mimulus alsinoides	S1
Papaver radicatum ssp. *kluanense*	S1
Penstemon janishiae	S2
Phacelia inconspicua	S1S2
Physaria didymocarpa var. *lyrata*	G5T2+S2
Pilophorus acicularis	S2
Polypodium glycyrrhiza	S1
Potamogeton diversifolius	S2
Pyrrocoma insecticruris	G3+S3
Rubus spectabilis	S3
Thamnolia subuliformis	S2
Thelypteris nevadensis	S1
Trichophorum alpinum	S1
Xanthoparmelia idahoensis	S1

New to List, RARE:	**Rank**
Asclepias asperula	S1
Astragalus arthurii	S1
Astragalus collinus	S1
Boechera rollinsiorum	G1+S1
Carex cordillerana	S2
Eriogonum elatum var. *elatum*	S3
Ipomopsis congesta ssp. *crebrifolia*	S1S2
Lomatium basalticum	S3
Lomatium swingerae	G1+S1
Mirabilis linearis var. *linearis*	S1
Penstemon miser	S2
Penstemon salmonensis	G2+S2
Phacelia thermalis	S1
Potentilla hookeriana	S1
Potentilla modesta	S1

Newly Ranked, moved Review to RARE:	**Rank**
Carex occidentalis	S2
Castilleja peckiana	S2
Delphinium glaucescens	S3S4
Geum rossii var. *rossii*	S1
Juncus brevicaudatus	S2
Lomatium ravenii var. *paiutense*	S3
Mitella nuda	S1
Muhlenbergia glomerata	S1
Poa paucispicula	S1
Sclerolinon digynum	SH
Utricularia gibba	S1
Viola septentrionalis	S1
Xanthoparmelia camtschadalis	S1

Previously Ranked, maintain RARE:	**Rank**
Allium aaseae G2+S2	G2+S2
Astragalus conjunctus S3	S3
Sanicula marilandica S3	S3
Thalictrum dasycarpum S1	S1

Dropped from Review:	**Rationale**
Arabis lasiocarpa	No Idaho records
Bacopa rotundifolia	Introduced/adventive
Boechera hastatula	No Idaho records
Lomatium idahoense	G4(+?) S4
Mimulus ringens	Introduced/adventive
Sagittaria rigida	Introduced/adventive
Solanum heterodoxum	Introduced/adventive
Sparanium ermersum	S4

Dropped from RARE:	**Rationale**
Drosera intermedia	No Idaho records
Escobaria vivipara	No Idaho records

Considered for adding, but not added:	**Rationale**
Asclepias subverticillata	No Idaho records
Carex backii	Synonym/mis-id
Carex saximontana	Synonym/mis-id
Carex rossii var. *turbinatum*	S3S4
Penstemon attenuates var. *millitaris*	S4
Phacelia bicolor	No Idaho records

Discussed but not Ranked, leave on list:

Botrychium minganense
Muhlenbergia racemosa
Viburnum opulus var. *americana*

Lucky Peak Nursery Pollinator Garden

By Kay Beall, Pahove Chapter

Pollinators are essential to life on earth. Over 85 percent of the world's flowering plants, including more than two-thirds of the world's crop species, depend on pollinators. Butterflies/moths and bees are critical members of the pollinator group, and many species have suffered major declines in recent years.

The iconic Monarch butterfly *(Danaus plexippus)* has become a symbol of the movement to protect pollinators and their habitat. Populations are declining due to loss of habitat and their primary food source (in Idaho, primarily showy milkweed *Asclepias speciosa*), degradation of overwintering sites, and climate change. Idaho is one of the destinations for northern spring/summer migration from California, providing summer breeding areas and the starting point for southern migration in the fall.

Bee populations, including native bees, are declining because of habitat loss and fragmentation, disease and predation, and climate change. Most of Idaho's native bees are solitary bees, but also includes the social bumblebee. The western bumblebee *(Bombus occidentalis)*, once widespread from Alaska to California and east to the Great Plain states, is currently under review by the U.S. Fish & Wildlife Service for listing under the Endangered Species Act (USFWS 2016).

Ground-nesting solitary bee

New Pollinator Garden at Lucky Peak Nursery (2016-2017): In March 2016, in cooperation with the U.S. Forest Service Nursery at Lucky Peak, the Boise National Forest successfully competed for an ERIG (Education, Research, Inventory Grant) from the Idaho Native Plant Society to start a pollinator garden on the eastern grounds of the nursery. The Lucky Peak Nursery facility is located about 17 miles northeast of Boise off Highway 21, and grows millions of conifers and other native plants for reforestation and restoration on public lands. The Nursery's mission and this project dovetailed well with the purpose of ERIG—to stimulate and promote research, conservation and educational activities which contribute to the appreciation, conservation, or knowledge of Idaho's native flora or plant communities.

The purpose of the garden is to support native pollinators, including monarchs and other local butterflies, native bees, and other pollinating insects by promoting native species that will provide season-long habitat needs (pollen and nectar sources) and physical structure that will support seasonal reproduction/nesting and overwintering needs. The area will serve as a native plant and pollinator demonstration garden to be incorporated into ongoing environmental education activities hosted by Lucky Peak Nursery and the Boise National Forest. Value is added to the project by virtue of the garden being located within deer/elk winter range, and the diverse variety of other birds and wildlife associated with the area.

Ground-breaking for the garden started in June 2016, on an approximately two acre area on the east side of the nursery facilities, overlooking the Lucky Peak Reservoir. Unfortunately, formerly diverse habitat provided by big sagebrush/antelope bitterbrush *(Artemisia tridentata/Purshia tridentata)* communities has been highly impacted by the noxious weeds rush skeletonweed *(Chondrilla juncea)* and Canada thistle *(Cirsium arvense)*, and other non-native species such as medusahead rye *(Taeniatherum caput-medusae)* and cheatgrass *(Bromus tectorum)*, as well as several fires occurring in recent years. The garden area includes a stand of conifer trees—the result of plantings for past revegetation trainings held at the Nursery. Also included are a series of wetlands and an approximately 1-acre pond colonized by willows and emergent vegetation; originally constructed to treat the Nursery's field run-off and provide a source of irrigation water during drought periods.

This combination of sagebrush/bitterbrush habitat and wetlands creates a unique opportunity to restore the site to support native pollinators, birds, and other wildlife, and at the same time provide a convenient and easily accessible location to promote pollinator and native plant education.

Early groundbreaking included clearing two small islands and an access path in a sea of weeds. As part of the commitment to the "no pesticides" approach advocated by the Xerces Society—the surface mat of dead medusahead and cheatgrass stalks/seed heads was raked off, and perennial weeds grubbed out with hand tools. All native species were left in place—primarily big sagebrush, barestem biscuitroot *(Lomatium nudicaule)*; prairie star

(Lithophragma parviflora) and bottlebrush squirreltail *(Elymus elymoides)*. A small number of bluebunch wheatgrass *(Pseudoroegneria spicata)* transplants were installed in the islands. Canada thistle removal and/or seed head topping in the wetlands also took place. The work was accomplished with the help of the Idaho City Ranger District's YCC (Youth Conservation Corp) crew and teens participating in WOW (Wild Outdoor Week)—a program which introduces refugee youth to the outdoor activities and natural resource conservation work.

With the onset of the Pioneer Fire on the Boise NF midsummer 2016, further work at the pollinator garden was delayed until fall. This included more island cleanup, installation of golden currant *(Ribes aureum)* and black cottonwood *(Populus balsamifera* ssp. *trichocarpa)* seedlings, and seeding of western clematis *(Clematis ligusticifolia)* and blue elderberry *(Sambucus nigra* ssp. *cerulea)*. Species selection was oriented to native forb and grass seed and seedlings that would meet habitat needs for monarchs and native bees. Weeds were cleared around each seedling/seeded area to reduce competition to the newly establishing plantings.

A major planting effort was undertaken in the pollinator garden in the spring of 2017. Lucky Peak Nursery grew milkweed seedlings in their greenhouse, and 50 of them were planted in small rills that become visible following extensive spring rains. A total of 135 seedlings of western serviceberry *(Amelanchier alnifolia)*, red-osier dogwood *(Cornus sericea)*, black hawthorn *(Crataegus douglasii)*, wax currant *(Ribes cereum)*, Woods' rose *(Rosa woodsii)*, sulfur buckwheat *(Eriogonum umbellatum)*, mountain hollyhock *(Illiamna rivularis)*, and hot rock penstemon *(Penstemon deustus)* purchased from Buffaloberry Farms in McCall were planted at the pollinator garden at the same time. Planting was undertaken by Forest Service employees and volunteers.

Planting the pollinator garden

Seedling survival was low following the hot summer of 2017. The garden area is not irrigated, and despite the heavy spring rains, many seedlings were not well enough established to survive. Supplemental watering is going to be necessary to ensure higher survival of newly planted seedlings. In September 2017, additional milkweed seedlings were planted, with the hope of establishment before winter dormancy.

Continued Development of the Pollinator Garden at Lucky Peak Nursery (2018 and beyond): Work on the pollinator garden has been heavily dependent on available workforce and oversight time. The garden development plan consists of six phases and we originally hoped to be farther along by the end of 2017. It is now apparent that implementation will take several more planting seasons. Recruitment of volunteers, engagement of partners and securing additional funding sources will be critical to the success of this project at all phases.

Milkweed seedlings

Implementation Methods:

Phase 1: *Reduce noxious weed cover*. This was started by creating the planting islands and path, but will be an ongoing task. Weed removal work for this project is being done primarily by hand—use of heavy equipment would create soil compaction detrimental to the ground nesting bees (the most common type of solitary bee in the area). With the goal of avoiding herbicides, a long-term pest management strategy needs to be developed for the area using a combination of hand/mechanical and biocontrol strategies. There are some promising weed-suppressive bacterial biocontrol agents (such as *Pseudomonas fluorescens*) being developed to treat invasive annuals.

Phase 2: *Installation of native plant materials*. Over 200 seedlings have been planted in the Lucky Peak Pollinator Garden over the last two years. Due to extreme summer drought conditions and lack of irrigation, seedling survival has been low. A means of watering at least one or two times during the growing season would help increase survival. This would likely be accomplished via labor intensive methods such as use of backpack pumps or carrying buckets from the pond—but it is possible that a cooperative arrangement could be made with the engine crew stationed at the Lucky Peak Helibase to periodically provide water for the garden.

Future plant material sources would continue to include INPS sales, local native plant vendors, native plants grown at Lucky Peak Nursery, native seed in the Boise NF seedbank, and seed collected on-site at the Nursery and surrounding public lands. Seed and native plant materials collections are ideal tasks for volunteers.

Continued on Page 8

Lucky Peak Pollinator Garden**.....***Continued from Page 7*

Just a few of the local native species suitable for collecting/planting that will supply pollinator and wildlife needs include hot rock penstemon, fern-leaf desert parsley *(Lomatium dissectum)* and other biscuitroots, arrowleaf balsamroot *(Balsamorhiza sagittata)*, lupines *(Lupinus* ssp.*)*, sticky geranium *(Geranium viscosissimum)*, bluebunch wheatgrass, and bottlebrush squirreltail.

Golden currant

Suitable shrub plantings include elderberry whose pithy stems are used as nests by some bee species; gray rabbitbrush *(Ericameria nauseosa)* important for late season bees and butterflies; Scouler's and Booth willows *(Salix scouleriana, S. boothii)* which are both used by early spring bees; as well as bitterbrush, sagebrush, serviceberry, chokecherry, golden currant, syringa *(Philadelphus lewisii)*, black hawthorn and others.

Phase 3: *Habitat supplementation*. The habitat needs of the pollinators, birds and other wildlife would be supplemented with installation of supporting features such as:

- Old logs or logs with drilled holes to provide nesting sites for native bees
- Bee nesting boxes
- Flat rocks for butterfly temperature regulation
- Woodpiles constructed as shelters for overwintering butterflies (fire safety must also be considered here)
- Planting or creating windbreaks around butterfly feeding areas
- Construction and maintenance of intentional bare areas for ground nesting insects to overwinter
- Reconstruction and maintenance of existing nest boxes for bluebirds or other bird species
- Bat boxes

Building and installing supplemental features are ideal projects for schools, scouts, or other groups of native plant/pollinator enthusiasts.

Phase 4: *Environmental Education sign installation.* Signs and other interpretive materials on the identification and values of native pollinators and plants, and how the public can participate in supporting pollinator friendly plants at home and in the community, need to be created and installed. An entrance sign to the pollinator garden is scheduled for installation in spring 2018.

Phase 5: *Maintenance*. Continued maintenance will be needed to control weeds, and for structures and interpretive signs. Future development and availability of biocontrol agents may help reduce current competition from weed species and help maintain a pesticide-free weed control program. Use of supplemental watering will enhance seedling survival.

Phase 6: *Monitoring*. A monitoring program of native plants and insects is needed to evaluate the success of the garden. Criteria could include a pollinator habitat assessment (Jordan et al. 2014), native plant survival, success of weed suppression, education outreach and public involvement. Habitat assessment can be used as both an educational tool and a way of maintaining local support.

Acknowledgements: The Boise National Forest and the Lucky Peak Nursery would like to thank the Idaho Native Plant Society and the members of the ERIG committee for providing the opportunity to jump start this pollinator garden project.

Project Contact Information: USFS Boise National Forest, Idaho City RD, PO Box 129, Idaho City, ID 83631, (208) 392-3738; South Zone Botanist; or Lucky Peak Nursery 15169 East Highway 21, Boise, ID 83716, (208) 343-1977, Seed Program Manager.

For Further Information:

Cane, J.H. 2016. Floral guilds of bees in sagebrush steppe: evaluating bee community benefits among available wildflower species to seed after fire. USDA-ARS Pollinating Insect Research Unit, Utah State University. Webinar March 17, 2016, as part of The Great Basin Native Plant Project January–May 2016 Webinar Series.

Jordan, S.F., M. Vaughan, E. Lee-MÄder, J. Hopwood, J.K. Cruz, B. Borders, J. Goldenetz-Dollar, K. Gill, N. Adamson, and A. Stine. 2014. Native Bee Conservation Pollinator Habitat Assessment Form and Guide: Natural Areas and Rangelands. The Xerces Society for Invertebrate Conservation. Portland, OR http://www.xerces.org/wp-content/uploads/2014/12/PollinatorHabitatAssessment_NaturalAreasRangelands_web.pdf

Landis, T.D., R.K. Dumroese, M.E. Horning. 2014. Create a pollinator garden at your nursery: an emphasis on monarch butterflies. Fort Collins (CO): USDA Forest Service, Rocky Mountain Research Station. Forest Nursery Notes 34(1&2): 4-15. https://www.fs.fed.us/rm/pubs_other/rmrs_2014_landis_t002.pdf

Monarch Joint Venture. 2016. Gardening for Monarchs: Creating habitat for monarch butterflies and other pollinators. http://monarchjointventure.org/. 2 p. http://monarchjointventure.org/images/uploads/documents/GardeningforMonarchs.pdf

USDA Forest Service. 2012. Bumble Bees of the Western United States. Pollinator Partnership. 144 p. http://www.fs.fed.us/wildflowers/pollinators/documents/BumbleBeeGuideWestern2012.pdf

USDA Forest Service. 2016. The Monarch Butterfly in North America. Webpage. http://www.fs.fed.us/wildflowers/pollinators/Monarch_Butterfly/index.shtml

USDA Natural Resources Conservation Service. 2011. Plants for Pollinators in the Intermountain West. Plant Materials Technical Note No. 2A. January 2011 Revision. 40 p. http://www.xerces.org/wp-content/uploads/2011/02/nrcstechnote_plantsintermtnwest.pdf

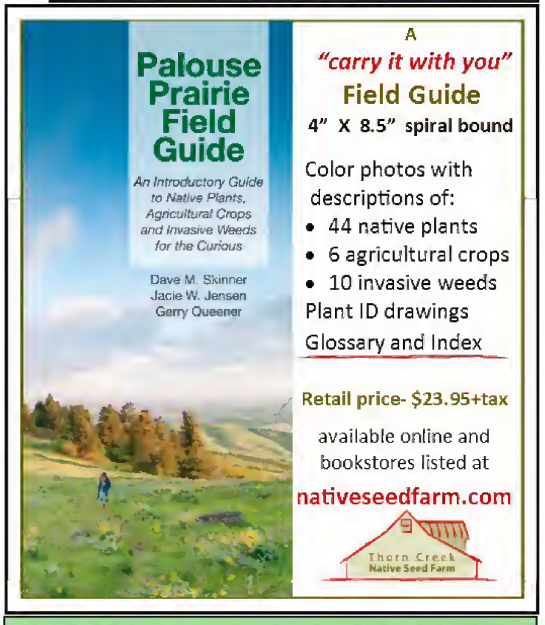
US Fish and Wildlife Service. 2016. Federal Docket Number FWS–R6–ES–2016–0023. Supporting Documents: 90-DAY FINDING ON A PETITION to list the western bumble bee *(Bombus occidentalis)* as an endangered, or alternatively as a threatened species pursuant to the Endangered Species Act and for the designation of Critical Habitat for this species. 18 p. https://www.regulations.gov/document?D=FWS-R6-ES-2016-0023-0003

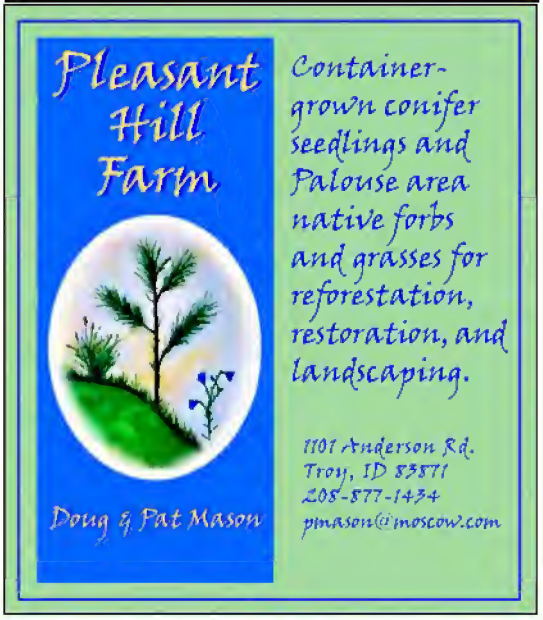
US Fish and Wildlife Service. 2016. U.S. Fish and Wildlife Service Mountain-Prairie Region evaluating the status of two species: western bumble bee and deseret milkvetch the focus of in-depth review. News Release March 15, 2016. U.S. Fish and Wildlife Service Office of External Affairs, Mountain-Prairie Region, Lakewood, CO. https://www.fws.gov/mountain-prairie/pressrel/2016/03152016_US-Fish-and-Wildlife-Service-Evaluating-the-Status-of-Two-Species.php

Xerces Society. Monarch Conservation. Webpage. http://xerces.org/monarchs/

Xerces Society. Native Bee Biology. Webpage. http://www.xerces.org/pollinator-conservation/native-bees/ •

Orton Botanical Garden, Inc.
aka Plantasia Cactus Gardens
Large selection of Idaho and Great Basin native plants.
Cold hardy cacti, yuccas and other succulents.
Our 5-acre drought tolerant botanical garden is open by appointment April 1 to Nov 1.
Open house and plant sale held the last two weekends in May.
867 Filer Ave W, Twin Falls, Idaho 83301
Phone: 208-734-7959, cell: 208-308-6840
Website: www.ortonbotanicalgarden.com
Email: lorton1@msn.com


Palouse Prairie Field Guide
An Introductory Guide to Native Plants, Agricultural Crops and Invasive Weeds for the Curious
Dave M. Skinner
Jacie W. Jensen
Gerry Queener
A
"carry it with you"
Field Guide
4" X 8.5" spiral bound
Color photos with descriptions of:
• 44 native plants
• 6 agricultural crops
• 10 invasive weeds
Plant ID drawings
Glossary and Index
Retail price- $23.95+tax
available online and bookstores listed at
nativeseedfarm.com
Thorn Creek Native Seed Farm


Pleasant Hill Farm
Doug & Pat Mason
Container-grown conifer seedlings and Palouse area native forbs and grasses for reforestation, restoration, and landscaping.
1101 Anderson Rd.
Troy, ID 83871
208-877-1434
pmason@moscow.com

Western Society of Weed Science Annual Meeting

By Daniel Murphy, Pahove Chapter

In March of this year, I went to Garden Grove, California to attend the 71st annual meeting of the Western Society of Weed Science. My trip was generously funded by an Education and Enrichment Award presented by the Pahove Chapter. It was a great opportunity for a weeds-obsessed plant geek like myself to hang out with weed scientists from across the western states and learn about their latest research. What follows are a few highlights and takeaways from the meeting.

General Session

Apart from opening remarks and business items, the general session featured two invited speakers: soil ecologist Lydia Jennings and historian David Marley. Lydia's talk was titled "Land Acknowledgement and Indigenous Knowledge in Science." She started by sharing a website called Native Land, which features an image of the Earth overlaid with known boundaries of indigenous territories. By entering your address, you can see a list of the tribes that historically used the land you now inhabit. It is important for us to consider the history of the land we currently live and work on. Lydia then compared aspects of western science and indigenous science; pointing out ways they differ, as well as ways they can be used in tandem. By collaborating with tribal nations, weed scientists can benefit from traditional ecological knowledge.

David Marley was the comic relief. Well-versed in the history of Disneyland, he humorously presented a series of stories involving its creation. Little of what he had to say related to weed science, which he openly admitted along the way; however, one weeds related story stood out. Due to a lack of funds, the early years of Tomorrowland featured few landscape plants. To make up for that, Walt Disney had signs with fake Latin names created for some of the weeds that were growing there.

Weeds of Range and Natural Areas

I spent the last half of the first day in the "Weeds of Range and Natural Areas" session, where I learned about herbicide ballistic technology (i.e. killing plants from a helicopter with a paintball gun loaded with herbicide). This is one of the ways that *Miconia calvescens* invasions in Hawaii are being addressed. I also learned about research involving plant debris left over after logging. When heavy amounts of debris are left in place, scotch broom *(Cytisus scoparius)* infestations are thwarted. There was a talk about controlling escaped garden loosestrife *(Lysimachia punctata)* populations in the Seattle area, as well as a few talks about efforts to control annual grasses like cheatgrass *(Bromus tectorum)* in the sagebrush-steppe ecosystem.

Basic Biology and Ecology

On the morning of the second day, the "Basic Biology and Ecology" session held a discussion about weeds and climate change. As climate changes, weeds will adapt and find new locations to invade. Perhaps some weeds won't be as problematic in certain areas, but other species are sure to take their place. Understanding the changes that are afoot and the ways that weeds will respond to them is paramount to successful weed management. This means documenting the traits of every weed species, including variations between and among populations of each species, so that predictions can be made about their behavior. It also means anticipating new weed species and determining ways in which weeds might exploit new conditions.

No doubt there is much to learn in order to adequately manage weeds in a changing climate. An intriguing idea brought up during the discussion was to use citizen scientists to help gather data about weeds. Similar to other organizations that collect phenological data from the public on a variety of species, a website could be set up for citizen scientists to report information about weeds in their area. Of course, Bugwood has already developed a series of apps for citizen scientists in North America to report invasive species sightings, so it seems this is already happening to some degree.

Teaching and Technology Transfer

A highlight of the afternoon's "Teaching and Technology Transfer" session was learning about the Wyoming Restoration Challenge hosted by University of Wyoming Extension. This was a three year long contest in which thirteen teams were given a quarter-acre plot dominated by cheatgrass, with the challenge to restore the plant community to a more productive and diverse state. Each team developed and carried out their own strategy and in the end were judged on a series of criteria including control of cheatgrass and other weed species, plant diversity, forage production, education and outreach, and scalability.

And so much more...

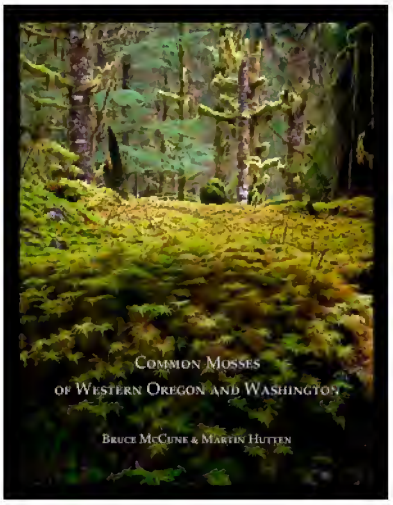
With multiple sessions being held simultaneously,

I was unable to attend every talk. There were dozens of other presumably excellent presentations that I had to miss. One final highlight, however, was getting to meet up with Heather Olsen, a researcher at Utah State University, and talk to her briefly about her work in updating the *Noxious Weed Field Guide for Utah*. If you are at all interested in weeds of the western states, the Western Society of Weed Science is a group you should meet. They are fun and friendly people who really know their weeds. •

Book Review

Common Mosses of Western Oregon and Washington by Bruce McCune and Martin Hutten
Published by Wild Blueberry Media, Corvallis, Oregon. iv+148 pages.

From the moment you open Bruce McCune's and Martin Hutten's *Common Mosses of Western Oregon and Washington*, you'll be impressed with their microphotography and attention to detail. The front cover alone delights the eyes and encourages you to further explore their new keys and photography that clearly show moss characteristics such as leaf tips, lamellae, papillae and cross-sections.



This valuable resource book will not only aid students and naturalists identifying the common Pacific Northwest mosses on the west side of the Cascade Range, but will also expand their skills and techniques. Read the tools and techniques section before jumping right into the keys. You'll laugh when you learn how to use MiraLax as an embedding agent for leaf sections and realize that the authors have spent numerous hours dissecting moss specimens. Their insights will help you choose and modify your dissecting tools for more efficient use and give you handy pointers to reduce the frustrations of working with small and fragile materials.

Careful attention to detail is one of the many attributes that makes the book unique. The keys to species, the heart of the book, are carefully designed so species descriptions and photos of the specimens are side by side. The end points to the keys offer taxa characteristics and ecological information that help confirm your identification. If your specimen does not fit the brief descriptions in the end point you know you've gone astray somewhere in the key. A real jewel is that after the taxa name, in parentheses, are three references you can use to confirm your keying result. The authors give the page and plate numbers to find the specimens in Moss Flora of the Pacific Northwest, California Mosses, and Some Common Mosses of British Columbia. By giving exact page numbers of references, the authors greatly reduce the time involved in identification confirmation.

The majority of moss species addressed in this book also occur in parts of Idaho and Montana, making this book a valuable primary reference for students and teachers of mosses throughout the Pacific Northwest. For years bryologists praised the illustrations of Lawton, Flowers, and Schofield, but now we have McCune's and Hutten's photography that takes us to a new level. Their expert work allows us to identify the common mosses while enjoying beautiful photography and easy-to-use species keys.

—Alma Hanson, White Pine Chapter

Thorn Creek
Native Seed Farm
1461 Thorn Creek Rd, Genesee Idaho 83832
www.nativeseedfarm.com
"We are a 4th- generation family farm where the plants and the people are deeply rooted in the heritage of the land."
Wayne and Jacie Jensen
Bringing you authentic native forb seed from the Inland Northwest grasslands.
- Source-identified and certified seed.
- Grown on the fertile fields of the Palouse.
- 20 species available in packets, by 1/4 Oz., to Lb. increments.
- Prairie mixes and custom mixes available.

Visit us at Thorn Creek Native Seed Farm:
www.nativeseedfarm.com
info@nativeseedfarm.com
(208) 596-9122

Pahove's First Wildflower Show

Article by Caroline Morris, Photos by Barbara Ertter, Pahove Chapter

Pahove staged its first wildflower show on Saturday, May 12. Our event was included in the monthly Family Day held at Boise Parks and Recreation Department's Foothills Learning Center. We were pleased with attendance, people's interest and curiosity, and our plant display. We also learned how we might better promote and prepare for next year's show. Barbara Ertter is head of Pahove's Floristics Committee and always trying to spur others' interest in and education about native plants. She suggested collecting and publicly displaying wildflower species about a year ago. Discussions soon added flowering weed species to the specimens for collection and display. Most plants came from the Boise foothills and

Bogus Basin area. The Ertter team found, picked, refrigerated, labeled, and exhibited 112 different plants. Barbara prepared small adhesive-backed labels, which were then stuck onto black construction paper and folded to stand up. Finding containers for so many plants of all sizes required raiding members' pantries and thrift shops. In 1.5 hours before the public's arrival, several Pahove arrangers chose appropriate vessels for each plant, added water, and found all a favorable display space on the tables and counters in the classroom. Barbara's botanist houseguest, Lindsay Woodruff from Austin, Texas, certainly earned her room and board.

Susan Ziebarth, our graphics wizard, prepared three standup laminated signs reading:

The flowers on display were collected by professionals following strict collecting protocols.

Please always leave native wildflowers for the pollinators and for others to enjoy.

The signs were distributed on various display tables, along with INPS membership brochures. Alan Crockett

skillfully led two wildflower walks for interested plant lovers.

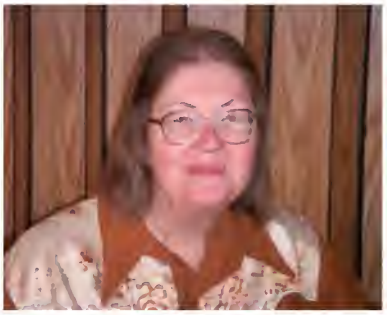
One unusual featured plant was the newly named Boise sand-verbena *(Abronia mellifera* var. *pahoveorum)* with May-nights' blooms of white, mildly fragrant large pompoms. This plant grows in some areas with ongoing residential development, so protective actions are needed to prevent its extirpation. Another species on display was *Lomatium andrusianum*, a new biscuitroot species named in honor of late Idaho Governor Cecil Andrus.

Twenty-seven species displayed were introduced weeds. These were all placed on one crowded table, with people eager to identify which of these monsters inhabited their yards. We answered all kinds of questions during the 3-hour show. Magnifying glasses were popular, especially, but not only, with kids.

At the show's conclusion, we composted all plants except weeds, or those wanted by someone. Weeds were trashed. Containers will be stored by a few members. Next year, we will have much more PR, written collection guidelines for two teams, laminated and waterproof labels (although only a few were soaked by spills), and larger display space. Other modifications are likely, but this show was a worthwhile beginning. Other Pahove members participating included Ann Brueck, Beth Corbin, JoAnne Michaels, Caroline Morris, and Sandy Smith. All enjoyed it. We genuinely appreciated the Foothills Learning Center staff's friendly, helpful assistance. •

Janet Benoit 1940-2018

I'm sad to report the passing of Janet Benoit (August 6, 1940-April 20, 2018), a major contributor to the Idaho Native Plant Society for over a quarter century. Janet joined the Calypso Chapter in Coeur d'Alene in 1992, just one year after the chapter's formation. She quickly became a chapter officer and served the chapter in various officer roles ever since. She worked tirelessly within Calypso Chapter for the benefit of north Idaho's native plants. Janet had a vast knowledge of native plants and well-honed skills that she put to good use leading numerous outings for the chapter. She was responsible for continuing the chapter's influence in educating the public about native plants. Janet made major contributions to INPS beyond the local chapter. She served as the statewide INPS president from 2005 to 2008. One of her chief goals as president was to foster relationships between individuals and the various chapters throughout the state. Janet played a key role in overhauling the bylaws to make INPS a more functional organization.



One would think with all of Janet's volunteer contributions to INPS that she would not have time to volunteer for any other organization. Not true! Janet's list of volunteer contributions is very impressive indeed.

Janet is a legend in the Bonner County 4-H world. 2018 was her 36th year as a volunteer 4-H Leader with the Careywood Eager Beavers. She taught crochet, knitting, leathercraft, and forestry. Two years ago she took a team to the National Forestry Contest in West Virginia, where the team place 6th in the nation. Janet also served as a volunteer AARP Tax Aide since 2002. She became the local coordinator for the Athol Community Center site in 2004. The Athol site does 100 tax returns a year. Janet was selected as an AARP Foundation Tax Aide Fellow. The award is received by less than 1% of volunteers.

Janet joined the Idaho Forest Owners Association in 1993. She encouraged many new forest landowners to join this valuable organization and to better manage and care for their forest lands. To expand her knowledge of trees, Janet was one of the first to take advantage of the Idaho Master Forest Stewards program offered by the University of Idaho Extension program. She logged in more than 800 volunteer hours as an Idaho Master Forest Steward. Janet joined the ABC (Athol-Bayview-Careywood) Garden Group to expand and share her 44 years of gardening experience with others. She is famous for her stories of gardening in Careywood's "arctic."

The Idaho Forest Owners Association Education Foundation has established the Janet Benoit Memorial Forestry Scholarship Fund to fund scholarships for youths and adults in forestry related programs. Contributions can be sent to Idaho Forest Owners Association—Education Foundation, P.O. Box 1257, Coeur d'Alene, ID 83816-1257.

— *Derek Antonelii*, Calypso Chapter

CALYPSO CHAPTER

When: Meetings are the first Wednesdays of March, April, May and October at 7:00 pm. Field trips take place during the spring, summer, and early fall months.
Where: Meeting are held in the conference room of Idaho Department of Fish and Game, 2885 W. Kathleen Ave., Coeur d'Alene
Contact: Derek Antonelli, ds.ca.antonelli@gmail.com

LOASA CHAPTER

When: Meetings are held the third Thursday of each month at 7:00 pm.
Where: Taylor Building, Room 248, College of Southern Idaho, Twin Falls.
Contact: Bill Bridges, bridgesbill34@yahoo.com

PAHOVE CHAPTER

When: Meetings are held on the second Tuesday of each month from September–April at 7:00 pm. Dates, times, or topics are occasionally subject to change. Upcoming meeting information is sent to members via postcard and/or email. Events are also posted on the Pahove Chapter page of the INPS website: http://idahonativeplants.org/local-chapters/pahove/
Where: The MK Nature Center Auditorium, 600 S. Walnut Street, Boise.
Contact: For more information about activities please visit the Pahove Chapter page on the INPS website, or email pahove.chapter.president@gmail.com

Board Position Opening:

Pahove chapter is seeking a new board president. Current president, Karie Pappani, has served the chapter exceptionally for 7+ years, and the time has come to select her successor. Interested individuals are encouraged to contact the board at pahove.chapter.president@gmail.com

Past events:

Another season of presentations is behind us. As usual, we were enriched and entertained by our presenters, and thank them for taking the time to share their knowledge and experience with us. Our annual native plant sale was a big success. Only a few plants remained after the two day sale, and a stack of new membership applications were processed. Overall it was a very successful season, and we look forward to kicking off another one this coming September. Until then, enjoy the summer.

Memorandum of Understanding: The Pahove Chapter and Land Trust of the Treasure Valley (LTTV) signed a Memorandum of Understanding (MOU) in late February, 2018. The intent of the MOU is to formalize a relationship between the two organizations that share several overlapping goals and interests. The LTTV mission is to conserve the natural, scenic, recreational, historic, and agricultural values of southwestern Idaho's open spaces. Within the MOU, the Chapter agrees to assist the LTTV on native plant conservation and restoration projects at Harrison Hollow, an open-space property near Boise's North End neighborhood. Cooperative projects will focus on native plant community restoration efforts and may include plant propagation, planting native plant species, weed control, and monitoring. Opportunities for rare plant conservation projects are also available at Harrison Hollow. The MOU will provide Pahove Chapter members opportunities to participate in projects benefiting native plant species and plant communities in a popular, high-profile open-space area.

Pahove Bus Tour to Orton Botanical Garden:

Pahove members and other plant-lovers enjoyed a fine guided tour of Orton Botanical Garden (OBG) in Twin Falls on May 22, Idaho's newest botanical display garden. The one-day trip on a comfortable, professionally driven bus, cost $25 per person, $5 of which was given to the non-profit OBG.

The 50+ participants took walking tours of this lovely 5-acre site, with informative commentary by OBG's founders, LaMar and Rosalie Orton, and always helpful INPS members/botanists, Ann DeBolt and Roger Rosentreter. Stroll-around time also let us revisit favorite or unusual plants and photograph the spectacularly blooming cacti and buckwheats, just a sample of the botanical gems to admire. We luckily had lovely weather.

OBG's sales display of unique, high quality cacti, succulents, and native plants at reasonable prices tempted many gardeners. On our return trip to Boise, the bus cargo area was filled with captivating OBG plants for our gardens. We were glad to learn that OBG will have its first open hours on Fridays and Saturdays from 10am-4pm from June–September 2018. Encourage friends to visit. Thanks to all Pahove members who recruited passengers and helped with myriad trip details. Yay Susan Zeibarth and Ann DeBolt for a NO-water-bottle mission!

SAWABI CHAPTER

Contact: Karl Holte at plantprof@live.com, (208) 241-8358

Past events:

Annual Chapter Meeting: The Sawabi Chapter met on April 2nd for the annual chapter meeting at Puerto Vallarta restaurant in Pocatello. Election results for of-

ficers for 2018 resulted in the re-election of Paul Allen as President, Geoff Hogander as Vice President, Barbara Nicholls as Secretary and Linda Edwards as Treasurer. Sawabi had a booth at Pocatello's annual Earth Day Environmental Fair on April 21, where small potted plants and seedlings were handed out along with "seed bombs" made of seeds, soil, and clay molded into balls designed to be tossed anywhere where they can sprout and flower.

Winter Plant Talks: May 7th was the last of Sawabi's monthly winter plant talks at the ISU Student Union. Ray Liable and Dr. Roger Boe talked about their experiences in Hawaii with flora, fauna and fire.

Summer Plant Walks: Sawabi's summer schedule of Monday evening plant walks and Saturday plant hikes started with Karl Holte's annual Cherry Springs Nature Walk on May 12. We finished the day with a potluck meal at the Holtes.

Upcoming events:

Upcoming field trips: May through September. The public is invited to all Sawabi Chapter field trips and events. Most of our trips carpool from the Bison sculpture located behind the Idaho Museum of Natural History building which is adjacent to the Pond Student Union building, lower campus, Idaho State University. The sculpture is by the big parking lot at 5th and Dillon. You may choose to meet us at the Bison to carpool and caravan, or later at the trip site. For questions and directions: Contact the Holtes, (208) 232-6563, or the Nicholls, (208) 233-0714, or Geoff Hogander, (208) 232-3437. At least a week before each trip, an email is sent to those on our email list with details about the trip's plants, terrain, location, and directions to the site. See the full schedule on the INPS-Sawabi Chapter webpage: https://idahonativeplants.org/wp-content/uploads/2018/05/Field-Trip-Schedule-for-2018-copy.pdf

UPPER SNAKE CHAPTER

The Upper Snake Chapter is currently inactive.

Contact: Rose Lehman, jojorose@cableone.net

If anyone is interested in reviving the chapter, they are welcome to contact Rose.

WHITE PINE CHAPTER

When: Meetings are held once a month except during the summer. Field trips can occur most any month. Please check the chapter website at www.whitepineinps.org for events which may be scheduled or finalized after *Sage Notes* is printed; or email the chapter officers at whitepine.chapter@gmail.com

Where: Great Room of the 1912 Building, 412 East Third St. in Moscow at 7 pm.

Contact: INPS, White Pine Chapter, PO Box 8481, Moscow, ID 83843 or whitepine.chapter@gmail.com

Upcoming events:

July 21: Dr. Steve Cook from the University of Idaho will lead us on a field trip to discuss forest insects and how they affect forest health. This field trip will start with a group information program at a site and time to be determined and then continue to multiple forest sites to examine forest health and insect activity. Please check the White Pine Chapter web calendar for details.

July 29-August 3: Call for GLORIA (Global Observation Research Initiative in Alpine Environments) Field Volunteers. The White Pine Chapter is co-operating with the Wallowa-Whitman National Forest to set up climate change plots at Mt. Howard and the Eagle Cap Wilderness Area in the Wallowa Mountains. The plan is for everyone to make their way to Joseph, Oregon, by the afternoon of July 29, where there will be a shuttle up to Mt. Howard because of limited space for vehicles. Camping will be dispersed, in a somewhat flat sagebrush meadow; so bring your fattest ground pad! We will have access to outhouses. Everyone is responsible for their own camping gear, food and beverages (including water). The hope is to get all the fieldwork done in 3 days (Tues–Thurs) weather permitting, but we may need to work through Friday. We primarily need botanists (plant identification skills), but there will be non-botany support work to do as well (setting up plots, data recording, taking photos). Email Upekala Wijayratne, Ecologist with the Malheur, Umatilla and Wallowa-Whitman National Forests if you wish to learn more about volunteering (ucwijayratne@fs.fed.us).

September 13: Angela Sondenaa will present a program on the Nez Perce Tribe's rare plant and prairie conservation work. She will discuss the results of extensive inventories completed, the results of reproductive ecology and pollinator research on specific species, explain the Tribe's prairie inventory and assessment projects, and update us on the conservation of *Silene spaldingii* in Joseph Creek.

WOOD RIVER CHAPTER

When: Meetings are held various weekday evenings beginning at 7:00 pm.

Where: Meetings are held at the Sawtooth Botanical Garden, located three miles south of Ketchum, on Highway 75 and Gimlet Road.

Contact: Cynthia Langlois at cplangloisACRP@msn.com for information about field trips and presentations. Also, check Sawtooth Botanical Garden website: sbgarden.org for presentation updates. •

IDAHO NATIVE PLANT SOCIETY
PO Box 9451, Boise, ID 83707
www.idahonativeplants.org
ADDRESS SERVICE REQUESTED

Find us on: facebook

Idaho Native Plant Society Membership Form

Name _____

Address _____

City/State _____ *Zip* _____

Phone _____ *E-Mail* _____

Chapter Affiliation:

- ☐ Calypso (Coeur d'Alene)
- ☐ Loasa (Twin Falls)
- ☐ Pahove (Boise)
- ☐ Sawabi (Pocatello)
- ☐ Upper Snake (Idaho Falls)
- ☐ White Pine (Moscow)
- ☐ Wood River (Ketchum/Sun Valley)
- ☐ No Chapter

Membership Level:

- ☐ New ☐ Renewal
- ☐ Senior $10
- ☐ Student $10
- ☐ Individual $17
- ☐ Household $22
- ☐ Sustaining $35+
- ☐ Patron $100+

I would prefer to receive ***Sage Notes***: ☐ Print ☐ Electronic ☐ Both

Send completed form and full remittance to:
Idaho Native Plant Society
P.O. Box 9451
Boise, ID 83707

Memberships run calendar year. New memberships enrolled after June 1 include the following year. ***Renew or join online:*** *https://idahonativeplants.org/membership/*

Sage Notes is published quarterly by the Idaho Native Plant Society. Past issues can be viewed online at: http://idahonativeplants.org/sage-notes/

Submissions: Members and non-members may submit material for publication. Relevant articles, essays, poetry, news, announcements, photographs and artwork are welcome. Authors, artists and photographers retain copyright to their work and are credited in *Sage Notes*. Send all submissions electronically to the editor at the link below. Please provide a phone number and/or email address with your submission. Submission deadlines are January 8, April 1, August 1 and November 1.

Advertising: Advertisements help reach environmentally-minded, native plant-loving customers and help support INPS. Prices: 1/8 page = $5, 1/4 page = $8, 1/2 page = $15. Submit ads electronically to the editor (JPG, TIFF, PSD or PDF files). Send payment to: Sage Notes Ads, P.O. Box 9451, Boise ID 83707.

Editor: Michael Mancuso, sage-editor@idahonativeplants.org

Vol. 40 No. 3 September 2018

Sage Notes

Newsletter of the Idaho Native Plant Society • Promoting Interest in Idaho's Native Flora

INPS 2018 Annual Meeting in the Coeur d'Alene Mountains

By Derek Antonelli, President, Calypso Chapter

The Idaho Native Plant Society's 2018 Annual Meeting was held in the beautiful Coeur d'Alene Mountains from Friday, June 29, through Monday, July 2. Fifty-seven people registered for the four-day event, hosted by the Calypso Chapter. We staged activities out of the U.S. Forest Service Bumblebee Campground Group Site along the Little North Fork of the Coeur d'Alene River. The focus of the event was John Leiberg, a Swedish-American pioneering botanical collector, forester, and bryologist. Leiberg was responsible for documenting floras throughout the Pacific Northwest, but particularly north Idaho.

Activities began Friday. As people checked in, they were given the opportunity to participate in a plant scavenger hunt. The objective was to see who could find the most species of plants around the campground. Other users of the campground must have thought we were crazy. Beth Corbin was the winner after finding 92 different species of plants. While Beth was showing off her superior plant identification skills, the rest of us were dining on grilled hamburgers, sausages, and some outstanding potluck fare.

Saturday was a busy day for activities. Half of the group took a field trip up to the Twin Crags/Mount Wiessner area. The field trip was led by author and naturalist Jack Nisbet, with assistance by BLM botanist LeAnn Abell. This was an area John Leiberg visited in the late 1800s on his surveys for the U.S. Government. Jack Nisbet has been researching a book on John Leiberg and provided fascinating insights into the work of Leiberg during the field trip. The other half of our group completed two plant walks, both led by Derek Antonelli. The morning's walk was through Settler's Grove of Ancient Cedars. This grove of giant western red cedars *(Thuja plicata)* has been established since the time of Columbus. The grove experienced a forest fire in 2015, and it was interesting to see how resilient this habitat was to the effects of fire. The afternoon walk was up Coal Creek and provided a good example of the mesic forests of north Idaho. The birders in our group were impressed by the American dippers being very active in the creek.

Saturday evening incorporated the official portions of the Annual Meeting. The evening started off with a dinner catered by the Snake Pit, a company that has been in business since the 1880s Gold Rush days. Dinner was followed by an INPS business meeting. Members elected officers and discussed Society business. The evening concluded with a keynote talk by Jack Nisbet that covered the many contributions John Leiberg made to the understanding of the area's flora. A light rain forced the entire group under the canopy of a few trees, but we managed to stay dry and cozy.

Continued on Page 4

In this issue:

2018 INPS Annual Meeting..... 1
Letter From the President..... 2
Announcement..... 2
Eleventh Annual Idaho Botanical Foray..... 3
Reflections from the 2018 Annual Meeting..... 6
The Life of a Retired Botanist..... 7
2018 ERIG Awardees..... 8
Native Sagebrush Steppe Restoration..... 10
Great Plains Grassland Summit..... 12
Chapter News..... 14

IDAHO NATIVE PLANT SOCIETY
PO Box 9451, Boise, ID 83707
www.idahonativeplants.org
public3@idahonativeplants.org

INPS BOARD
President: Stephen Love
Vice-president: Tony McCammon
Secretary: Janet Bala
Treasurer: Karen Getusky
Membership: Derek Duval
Past-President: LaMar Orton
Member-at-Large: Mel Nicholls

CALYPSO CHAPTER
821 W. Mustang Ave.
Hayden, ID 83835
President: Derek Antonelli
Vice President: Vacant
Secretary: Karen Williams
Treasurer: Laura Asbell
Newsletter: Karen Williams

LOASA CHAPTER
340 E 520 N.
Shoshone, ID 83352
President: Bill Bridges
Vice President: Valdon Hancock
Member-at-Large: Kelvin Jones

PAHOVE CHAPTER
PO Box 9451, Boise, ID 83707
pahove.chapter@gmail.com
President: Karie Pappani
Vice President: Susan Ziebarth
Secretary: Daniel Murphy
Treasurer: Caroline Morris

SAWABI CHAPTER
1506 N. Mink Creek Road
Pocatello, ID 83204
President: Paul Allen
Vice President: Geoff Hogander
Secretary: Barbara Nicholls
Treasurer: Linda Edwards

UPPER SNAKE CHAPTER
Currently Inactive

WHITE PINE CHAPTER
PO Box 8481, Moscow, ID 83843
whitepine.chapter@gmail.com
President: Judy Ferguson
Vice President: Pam Brunsfeld
Secretary: Bettie Hoff
Treasurer: Susan Rounds

WOOD RIVER CHAPTER
PO Box 3093, Hailey, ID 83333
President: John Shelly
Vice President: Lisa Horton
Secretary: Jeanne Cassell
Treasurer: Carol Blackburn

Letter from the President

Membership in the Idaho Native Plant Society brings a unique set of rewards. It gives us a chance to rub shoulders with like-minded people, provides opportunities to learn about our unique and fascinating Idaho flora, and allows us to have influence in worthwhile conservation causes. Wherein a single connoisseur of incredible natural habitats has limited influence in conserving what we love, a unified group can bring a concentrated force. Being a member is rewarding in a number of positive ways.

Although we are an organization of volunteers, many dedicated people take the time to make things work. The INPS Board of Directors is made up of these kinds of people. We are currently in the midst of discussions that will hopefully result in stable, yet more responsive, organization. We are working to find ways to increase our contributions to the Education, Research, and Inventory Grant fund such that we are in position to strengthen native plant research and education. We are having discussions related to Society fiscal health and working to come up with ways to keep a stable budget. We are also working on solutions to communications issues that seem to plague complex organizations (with effective chapter-level function underlying statewide administration) with a goal to improve information flow from the state organization to individuals within our society. If you have any suggestions concerning any of these issues, please write to me or contact your chapter president.

In the meantime, I am going in search of the elusive *Penstemon salmonensis*. I hope you too have a native plant objective. Makes life much more interesting.

Stephen Love,
INPS President

Announcement

2018 Botanical Foray Plant Identification Workshops

After a successful 11th Annual Idaho Botanical Foray last June, we have hundreds of plants that need to be identified. There will be upcoming Identification Workshops that you are all invited to attend if you would like to share in the identification of those plants. All are welcome regardless of experience. For more information, please contact Don Mansfield (dmansfield@collegeofidaho.edu) or Beth Corbin (botanybeth@gmail.com).

November 1, 6:00 pm: College of Idaho Herbarium, Boone Hall
December 6, 6:30 pm: SRP Herbarium, BSU (Science Building, 2nd Floor)
February 7, 6:30 pm: SRP Herbarium, BSU (Science Building, 2nd Floor)
March 7, Time and location TBA

Correction

In the June 2018 issue of *Sage Notes*, the article titled "2018 INPS Rare Plant Conference," Table 1 on page 5, incorrectly included *Drosera anglica* as being dropped from the INPS Rare Plant List. It should have been *Drosera intermedia* shown as being removed from the list.

Eleventh Annual Idaho Botanical Foray

Article and Photos By Don Mansfield, Pahove Chapter

From May 31 to June 4, 2018, at least 30 folks with a passion for plants from as far as Wisconsin gathered at the Pioneer Campground by the Soldier Mountain Ski Area north of Fairfield, Idaho, to botanize in Camas, eastern Elmore, western Blaine and northern Gooding and Shoshone Counties. Each day two to five groups of seasoned and aspiring botanists searched new areas to voucher Idaho's diverse and amazing vascular flora. At the end of each day's exploration we returned to camp to press plants, meet with old acquaintances, and make new friends.

From left to right: Dave Tank, Sam West, Samantha Seabrook-Sturgis, Cara Hastings, Bryan Carrier, Jim Smith, Sarah Herzog, Emmitt Ambert, Bob McCoy, Chris McCoy, Don Mansfield, Barbara Ertter, Brenda Morales, Mary Ann Feist, Eli Rolapp, Rosemary Smith, Anne Halford, Janet Bala, Sandy Smith, Abbigail Selzer, Danielle Trawick, Allison Buiser, Beth Corbin, Rick Williams, Sophia Neumann, Pam Reschke, Rose Lehman, Brittni Brown.

Each morning participants could choose which group to join for the day. Some groups undertook lengthy hikes; others did not venture far from cars, but stopped at many places along the way. All groups collected plants from habitats as diverse as desert scablands, lush wetlands and marshes, coniferous forests, prairies, various sagebrush scrublands,and riparian meadows and woodlands. Over the course of four days we visited places such as Castle Rocks by Cat Creek Summit, Soldier Mountain foothills and Soldier Creek, Smoky Mountains, Sawtooth Methodist Camp, Big Beaver ACEC, Magic Reservoir, Fir Grove Mountain and Monument Gulch in Bennett Hills, South Fork Boise River, Wells Summit, Rock Creek, Bennett Mountain Road, and near Little Camas Reservoir. In the four days we gathered more than 900 unique collections, most of which were in triplicate so multiple herbaria can hold permanent records of our flora.

Pressing plants collected during the foray.

There are always some unusual plants that appear in our collections. This year, for example, we found a biscuitroot right in the campground that defied identification even by Don Mansfield, Jim Smith, and Mary Ann Feist, who recently named a new biscuitroot species after former governor Cecil Andrus. That new biscuitroot *(Lomatium andrusianum)* also was collected this year by the group at Rock Creek in Blaine County. The oddball new biscuitroot from the campground appeared to be *Lomatium ambiguum* with its tuberous root and leafy stem, but it had uncharacteristic involucel bractlets, indicating that it obviously does not read our current literature about how biscuitroots are supposed to behave! Also in Rock Creek drainage, we found a rare *Eriogonum crosbyae* on a volcanic ridge. In the Bennett Hills south of Camas Prairie we found such oddities as the tiny *Chorizanthe watsonii*, and the large, inflated-stemmed *Caulanthus crassicaulis*. And in the wetlands *Eleocharis bolanderi* appeared. *Artemisia papposa* was known from Camas Prairie and that was observed again this year in a new population. We saw that *Eriogonum thymoides* is more widespread in the area than some had thought. Dave Tank from University of Idaho, who studies paintbrushes, noted that we extended the range of *Castilleja tenuis* (formerly *Orthocarpus tenuis*). Interestingly, we found many populations of a plant currently on Idaho's Rare Plant List, *Astragalus adanus*, east of its known range. We will likely need to reconsider that species' status in an upcoming Rare Plant meeting.

As has been the case with the prior ten Idaho Botanical Forays, we celebrated each evening around the campfire, shared stories, and enjoyed what has become our traditional Saturday night potluck dinner. A good time was had by all.

Keep your eyes peeled (in forthcoming *Sage Notes* and the INPS website) for announcements of the Twelfth Annual Foray, which will be scheduled for the summer of 2019. At this time it looks like the University of Idaho will host the foray somewhere in Northern Idaho. Seasoned and novice botanists alike can enjoy getting to know the plants of our diverse and beautiful state. No prior knowledge of plants is required, but you will be guaranteed to be surprised by what we collectively find. Come join us, no matter what your background. •

2018 Annual Meeting.....*Continued from Page 1*

Sunday was another day for field trip activities. Part of our group, led by Val Goodnow and assisted by LeAnn Abell, traveled up to the ridges associated with Bloom Peak to see the Bloom Peak douglasia (*Douglasia conservatorum)*. This is the only place in the world to find this rare species. Another group led by Derek Antonelli hiked up to Revett Lake. The trail up to this scenic subalpine lake showcased many interesting plants. A third group visited Graham Creek. This field trip was led by Jill Roche. The participants on this walk were excited by Jill's interpretation of the characteristics of the area's mesic forest.

Back at camp on Sunday evening, some folks engaged in an informal plant identification session, while others had interesting conversations around the campfire. We all stuffed ourselves with leftovers from the two previous nights.

Bloom Peak douglasia. Photo by John Lee.

On Monday morning before breaking camp a small group took a quick field trip to the Montford Creek Research Natural Area (RNA). This RNA was established to preserve a portion of old growth western white pine *(Pinus monticola)* forest for comparison to managed forests. We were looking for the rare and elusive deer fern *(Blechnum spicant)*. It turned out to be too elusive for us, but we found a lot of other cool plants.

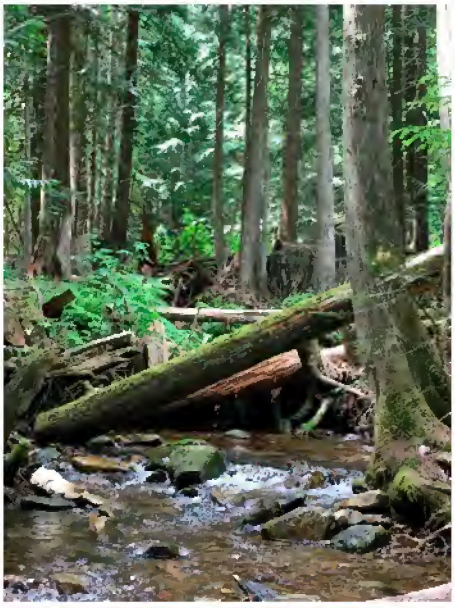
INPS Annual Meetings are always a good time. The 2019 Annual Meeting will be hosted by the Pahove Chapter. It will be held in the McCall area next July. Be watching for details and plan to attend! •

Field trip to the Twin Crags/Mount Wiessner area. The site provided magnificent views of the Coeur d'Alene Mountains. Photo by Karen Williams.

Author and naturalist Jack Nisbet led the field trip to the Twin Crags/Mount Wiessner area. Photo by Marilyn George.

The Settler's Grove of Ancient Cedars is a lush forest dominated by giant western red cedar trees. Photo by Nancy Miller.

Connie Antonelli at the base of a fallen giant western red cedar. A forest fire swept through Settler's Grove of Ancient Cedars in 2015. Some tree were killed, but the forest still thrives. Photo by Nancy Miller.



Coal Creek provided a good example of north Idaho mesic forest habitat. Photo by Nancy Miller.

Jack Nisbet provided a fascinating account of John Leiberg's work to document the regional flora at Saturday evening's keynote talk. Photo by Nancy Miller.

Some of the group that participated in the hike to Revett Lake. Photo by Dave Noble.

Jill Roche led the field trip up Graham Creek. Photo by Karen Williams.

The Montford Research Natural Area was established to preserve an example of old growth western pine forest. Many of the trees may have been killed by white pine blister rust. Photo by Dave Noble.

Something seems to have the group stumped at the informal plant identification session on Sunday evening. Photo by Karen Williams.

Reflections from the INPS 2018 Annual Meeting

By Alice Crocket, Pahove Chapter

My walking and hiking choices for the 2018 INPS Annual Meeting included Settler's Grove of Ancient Cedars on Saturday morning, Coal Creek on Saturday afternoon, and Revett Lake on Sunday morning. These excursions, interspersed with plant scavenger hunts, the Annual Meeting/Presentation by INPS President Steve Love, guest keynote speaker Jack Nisbet's program on the Swedish-American botanical collector John Leiberg, informal plant identification sessions, and potlucks at Bumblebee Campground, filled our days and evenings with camaraderie, native plant specimens/information, and a year's worth of catch-up. Our registration packet contained plant lists and area maps; knowledgeable botanists led and inspired us.

On Saturday morning at Settler's Grove of Ancient Cedars, colorful butterflies were mud-puddling (absorbing salts and amino acids from the soils) at the trailhead. We entered the grove through a welcoming wooden arch. The giant western red cedars that date back to when Columbus landed began to emerge and tower (some at 120 feet) above the 3.3-mile trail. We crossed the clear West Fork Eagle Creek several times on wooden footbridges.

My husband Alan took a picture of me hugging a western red cedar—more of a wingspan hug, because the tree was so huge. The air was hushed. All along the path, were shade-loving plants. (And they were on our plant lists, too.) In the heart of the cedar grove there were several benches spaced discretely for sitting, contemplation and musing. "A place to visit again," I thought.

Our hike on the Coal Creek trail on Saturday afternoon and our hike to Revett Lake Sunday morning were filled with more native plants. We carpooled on Sunday with friends Beth and Ray Corbin. They had chosen other

Saturday hikes and had not been with us when we went to the ancient cedar grove. After hiking to Revett Lake and finishing in early afternoon, we asked our friends if they would like to stop at the ancient cedar grove on the way back to Bumblebee Campground. After all, it was, sort of, right on the way. They said "Yes!"

The parking lot had considerably more cars than it had Saturday early morning. Butterflies were still plentiful. We walked through the wooden arch and into the grove. As we neared the center of the grove, we heard the soft beat of hand rattles. We looked up and saw four young women standing; each was holding and shaking an Indian hand rattle. They were separated from each other and each faced one of the four directions, east, north, west and south. They gently shook their rattles. They were blessing Mother Earth. We continued on to where the trail narrowed and eventually ended. We took pictures and treasured the ancient cedars before us. After our hike we returned to the trailhead. There stood the four "blessing" women. They were visiting quietly with each other. Butterflies rested on their hands, heads, shoulders and torsos. I softly thanked them for their earth blessings. One of them gently said, "Here is another blessing," and transferred one of her resting butterflies to my waiting hand.

The conference was excellent, but the "blessing" was the best! •

The Life of a Retired Botanist

By Pamela Brunsfeld, White Pine Chapter

I hadn't planned to be a botanist, it all started so innocently. I was going to be a doctor. I was taking the necessary biology courses at the University of Idaho, but two things happened that altered my plans. First, I had two botany professors, Richard Naskali and Doug Henderson, who inspired me so much I thought I would like to be a botanist. But I had to become a doctor. That was the plan. Then it was my senior year and I had taken every course necessary to complete my biology degree except the one I dreaded most—Animal Physiology. Within the first few days of class, the professor announced we would be "pithing" frogs —looking into their little eyes, sticking some poker in their brain resulting in a lobotomy, and then doing horrible things to them. I couldn't do it. One of my classmates volunteered to help me. "Nope" said the rather unpleasant professor and instructed me to leave. Thus, began my career as a botanist.

I loved working as a Forest Service botanist, consulting in Brunsfeld Botanical with my late husband, becoming director and curator of the University of Idaho Stillinger Herbarium and working with my own summer crews, teaching Systematic Botany, and giving presentations. It just feeds on itself until one day you realize you are a halfway decent botanist, and you love it! You discover the thing that made you take the path to become a botanist was one of the best things that ever happened to you. But wait a minute. All this time goes by and suddenly you are OLD! And that means retirement.

At first, I did not like retirement. I didn't know what to do. Then I realized I had an addiction to plants. I had to get back to what I loved, but how should I go about it? My husband, best friend, constant field companion, and botanist extraordinaire had passed away from cancer a decade ago. Some people are just fine going solo, but I'm deathly afraid of bears and needed someone to talk to besides my dogs, who attract bears! Goal number one was to find a partner who would slam on the brakes when instructed, back up when instructed, go anywhere I told him to look at plants, be tolerant of me spending hours looking at plants, not be afraid of bears, love dogs, and crave adventure. After searching high and low for many years I found a potential candidate. He was a photographer so could take pictures while I botanized; he had a chemistry background so liked science; found what I did interesting; and he loved adventure...and dogs.

We went to Europe. I wanted to look at Mediterranean plants, and oh, historical stuff, too. By now my

partner was actually looking at and asking questions about plants. There was hope. We found ourselves wandering around Crete and I heard a scream. In an open area, I saw my partner on the ground writhing in pain. I was sure he had been bitten by a snake, hopefully not poisonous—but probably so. I rushed into this field of Cucurbitaceae, with these interesting cucumber-like fruits. Trying not to stop to examine the fruits, I discovered this fruit had been the source of his enormous pain. This plant new to me (yay!) was *Ecballium elaterium*, the squirting cucumber. When ripe, the fruits "squirt" their seeds 10 to 20 feet within seconds. He had touched one, it fired at him, he pulled his hand back rapidly, and ended up with shoulder bursitis for well over a year. What a great seed dispersal mechanism!

I hate winter. Many botanists suffer Seasonal Affective Disorder, and I was one of those them. The Superbloom in the Southwest deserts was going to happen, and we were going. We purchased a trailer, headed south, hit an ice patch, our trailer smashing into the guard rails, but it was certainly good enough to get to those flowers! Even with a broken trailer I was in botany heaven for over a month. I had been to the desert before to look at plants in a "regular" year, but this time every inch of the desert floor seemed covered with these fleeting, stunningly beautiful annual wildflowers. We had to leave our trailer in southern Utah at the junk yard. There was only one solution to this problem the following year. We bought another trailer, did it all over again, without trailer incident. Now this is a tradition, period.

Most people think being a botanist is just picking flowers. Not only is there a lot of science to it, but also a lot of adventure aka danger. Once I was shot at doing a rare plant survey. Once I picked up a plant press and there was a rattlesnake under it. Once I was folding up a tent in Arizona and there was a large scorpion under it. And of course many flat tires in the middle of nowhere, including three in one day! Rattlesnakes, scorpions, flat

Continued on Page 9

The 2018 Education, Research, and Inventory Grant Awardees

By Bob McCoy, Sawabi Chapter

For those of you not familiar with the Education, Research, and Inventory Grant (ERIG) Program, it is one of the means through which the Idaho Native Plant Society provides outreach and furthers its goals of promoting Idaho's native plants and their understanding, appreciation and conservation. Each year the ERIG committee solicits and selects proposals that foster these goals. Proposals that are selected may be awarded up to a $1000 grant each for their projects. Projects that have been selected are a diverse group, and include school and library gardens that feature native plants, botanical gardens, and research by professional botanists and botany students. Their impact will be both short-term and extend many years into the future. ERIG awards disseminate our goals to a much wider community than we would otherwise be able to reach and are an excellent value providing tangible benefit.

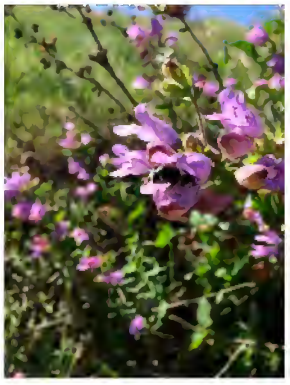
In 2018, INPS received eight grant applications, with six receiving awarded funds. The awardees are as follows:

The Ada Community Library Victory Branch ($600) is transforming existing tiered flower beds at the entrance to the library to create an educational pollinator garden. They are working with biologists from the U.S. Fish and Wildlife Service Idaho Office to create a garden made up of Idaho native plant species that will serve to attract and feed various pollinators and educate the public about the value and need for such landscapes in our community. Once the plants are in, the library will create an educational pamphlet and install instructional signage. It will also host programming in the library on related topics.

The Sawtooth Botanical Garden ($465) in the Wood River Valley is expanding and improving Carol's Wildflower Garden and the Montane Garden to create thriving examples of native plant landscapes. A native garden that is flourishing, healthy, and beautiful will inspire others to include native plant species in their own gardens. By expanding the species represented, the garden will offer increased educational opportunities to the public.

The City of Dover ($465) is diversifying its native plant gardens by engaging volunteers and staff to continue populating its established native gardens and identifying plants for the enjoyment of visitors. Additionally, they have StoryWalk kiosks at the entry and throughout the Park that are used for educating visitors about the plants within the gardens. Funds are being used for the purchase of native plants and identification placards.

A graduate student at the University of Ohio, **Rosa Rodríguez-Peña**, is studying the Role of Pollinator-Mediated Selection in *Penstemon* Flower Morphology and Genetic Diversity ($615). Her field studies are conducted over the range of the genus in the United States including Idaho. She is using her grant for travel and lodging expenses. Her objectives are:



Penstemon glandulosus. Photo by Rosa Rodriguez-Pena.

(1) To identify the relationship between flower morphology and geographic distribution; determining if populations that are closer to each other show fewer morphological differences.

(2) To determine how the changes in functional pollinators influence flower morphology.

(3) To estimate the affect of pollinators in maintaining genetic diversity and reducing genetic differentiation between populations.

The GLORIA team on the crest of the Lemhi Mountains. Photo by Beth Corbin.

The Global Observation Research Initiative in Alpine Environments (GLORIA) ($540) is a program to establish and maintain a worldwide, long-term monitoring network for comparative study of climate change impacts on high mountain vegetation biod-

iversity. The first GLORIA sites were established in Europe in 2001. In the United States, GLORIA is now established in several western states, with Idaho a recent addition to the contingent. Botanists and volunteers (including several INPS members) participated in establishing GLORIA research plots in the Lemhi Mountains this summer. The ERIG funds were used to help defray volunteer's travel and meal expenses.

The Salmon Valley Stewardship (SVS) ($465) requested support for aspen monitoring and restoration in the Salmon Valley, Idaho. Support from ERIG is being used to increase SVS's capacity to document restoration activities, engage citizen scientists, and provide training for local youth and adults. Funds will also be used for costs associated with aspen interpretive signs and a kiosk, including costs for printing and building supplies.

These 2018 ERIG awardees represent diverse projects ranging from local community, volunteer-based efforts that acquaint citizens with the value, horticultural potential, and heritage of Idaho's native plants, to world-spanning efforts by professional scientists to evaluate the impact of climate change. By partnering with projects such as these, your donations to ERIG are greatly leveraged and provide benefit to both Idaho and the world beyond. You are making a difference. This winter, when you renew your annual membership, please consider making an additional contribution to the ERIG program. You may also donate at any time on the ERIG webpage: https://idahonativeplants.org/erig-news/ •

***Retired Botanist**.....Continued from Page 7*

tires, but the worst danger is "the botanist" trying to do crazy things to get to those plants. This means climbing on ledges you have no business being on, jumping across rivers that if you missed you would be carried away, going into grizzly country and putting your bear spray in your pack because it is getting in the way of the two hands you need to collect plants, going on a ridgetop to collect plants when thunderheads are moving in, and finishing your hike with a headlamp then your phone light because your timing was off (too many cool plants, their fault). I had been on a ridgetop where lightning struck a minute later; I got lost both in the vehicle and on foot; I've startled herds of elk and hoped to not to be trampled. Then there is the fear of bears, the result of reading "The Night of the Grizzlies" my first year as a botanist in Glacier National Park. Then you realize you are not just a good botanist, but also an Indiana Jones adventure junkie. So now you have two addictions you must satisfy...for the rest of your life.

You never make a lot of money, but you can't buy memories. So, my advice to plant-lovers, from novice to professionals—when you get "old," get out there, learn some new plants, have fun, make good memories. What a great life and there are always so many more plants to learn. •

Native Sagebrush Steppe Restoration at Deer Flat NWR

By Bob Christensen, Retired Biologist and President of Friends of Deer Flat Wildlife Refuge

Introduction

The Friends of Deer Flat Wildlife Refuge (Friends) began a project to restore native vegetation near the Deer Flat National Wildlife Refuge (NWR) Visitor Center, along the shoreline of Lake Lowell, in Nampa, Idaho. The objective of the project is to improve vegetation biodiversity, create better wildlife and pollinator habitat, and improve public awareness of native plant communities. The first phase of the project (Plot No. 1) was initiated in 2016 and has been largely completed except for continued maintenance of the site. This phase was funded by grants provided by the Idaho Native Plant Society's ERIG program ($400) and the National Fish and Wildlife Foundation ($2061). The work was implemented through the help of refuge volunteers who have donated over 300 hours. In addition, the refuge staff helped by contributing 54 man- and equipment-hours.

Plot 1 Restoration Project Area - about 3 acres.

In addition to being adjacent to the visitor center, the project site is located along several trails which are heavily used by refuge visitors. This restoration project will promote and enhance local interest in Deer Flat NWR. It will enhance the natural history learning experiences for refuge visitors, including local school children, scouting groups, families, and wildlife enthusiasts. It will help educate local communities about the valuable natural resources that reside at Deer Flat NWR. Based on knowledge and experience gained in the pilot restoration project, the Friends plan to expand restoration efforts in the future to additional parcels of land on the refuge.

Site Description and History

The soils in Plot No. 1 are Vickery-Marsing silt-loams. They are shallow, underlain by gravel, and caliche is reported at 1-3 feet depth. Area elevation is between 2500 and 2600 feet. Past disturbances such as fire have led to a predominance of non-native plant species such as cheatgrass *(Bromus tectorum)*, Russian thistle *(Salsola kali)* and *Kochia* spp. Average annual precipitation for the area is 9.7 inches, much of it coming as winter snow. Originally, the project area vegetation was dominated by native shrubs including basin big sagebrush *(Artemisia tridentata* ssp. *tridentata)*, four-wing saltbush *(Atriplex canescens)*, and rubber rabbitbrush *(Ericameria nauseosa)*. Native grasses on the site included species such as bluebunch wheatgrass *(Pseudoroegneria spicata)*, needle and thread grass *(Hesperostipa comata)*, Sandberg bluegrass *(Poa secunda)*, and bottlebrush squirreltail *(Elymus elymoides)*.

Mowing Plot 1 prior to seeding with bunchgrasses.

Project Methods

During the 2016 growing season, the restoration site was alternately treated with *Roundup* and then mowed to keep the cheatgrass and other weedy species under control. In choosing plants for our restoration site, we wanted to include native shrubs, grasses and forbs. We took into consideration species used in previous restoration efforts on the refuge, but altered those lists somewhat after discussions with area land managers, botanists, and seed companies. During October of 2016 we drill-seeded a bunchgrass seed mix (purchased from Sun Mountain Natives, Moscow, Idaho) on Plot 1 which contained the following proportions (PLS/acre): bluebunch wheatgrass (2.5), bottlebrush squirreltail (1), Idaho fescue *(Festuca idahoensis)* (1), Indian ricegrass *(Oryzopsis hymenoides)* (1), and Sandberg bluegrass (1).

Later in the fall of 2016 we collected seed on the refuge uplands from basin big sagebrush and fourwing saltbush, as well as some seed from silver sagebrush *(Artemisia cana)* grown on an adjacent property. The shrub seed collections were taken to the Forest Service's Lucky Peak Nursery for cleaning and later sent to Buffalo Berry Farms (now Twin Peaks Nursery) in McCall, Idaho, to have them produce containerized seedlings. During the period of November 4-10, 2017, the nursery-grown containerized seedlings were planted (and watered) in Plot 1 with the following amounts (seedlings): basin big sagebrush (1260), silver sagebrush (598), four-wing saltbush (131), and assorted bunchgrass plugs (982).

Seven study plots (50′ by 50′) were set up to record the species and density of the various shrubs, and four study plots (10′ by 50′) to record the number and density of bunchgrass plugs. Starting in April 2018, the plants were hand-watered and weeded (as needed) each month of the growing season (as of July 2018 when this article was written). Also in April, 500 bitterbrush *(Purshia tridentata)* plants (bare-root stock which had been stored

Planting Day, November 4, 2018.

overwinter in a freezer) were planted on the site. The plants were made available by the Bureau of Land Management through the Idaho Fish and Game Department.

Results

In May of 2018, the Friends and refuge staff conducted a visual review of the planted area and found that the seedlings were doing well and had put on substantial growth, especially the sagebrush—many doubling in size (height and breadth). By conducting counts in the study plots, we were able to determine that winter survival rates were very good for all of the plants that had been grown in the nursery (average survival rate): sagebrush (92%), saltbush (85%), bunchgrass (85%).

The losses that did occur were primarily due to poor planting techniques, mechanical damage from weeding

Newly planted & watered sagebrush seedling, November 4, 2017.

around plants, and animal depredations (pocket gophers and mule deer). Subsequent observations, during watering sessions, have revealed healthy growth in all surviving hand-planted shrubs and grasses. Unfortunately, none of the bitterbrush plants survived more than a few days. (They possibly had been in the freezer too long.)

A note about the bunchgrass that was drill-seeded in October 2016: there was no apparent production of grasses from this effort during 2017—even after a very wet winter. We counted this seeding effort as a total loss. However, much to our surprise and excitement, the grasses began to emerge in early 2018; but with patchy success, depending on the variable soil conditions in Plot 1.

The vegetation composition in Plot 1 is already noticeably different from the dense cheatgrass carpet that previously existed. Although invasive grass species are still prevalent, they are less dense and vigorous. Some kochia and Russian thistle are emerging on the site, as well as other weedy species. But we also have some desirable annuals showing up, such as yellow sweet clover, sunflower, and wild onion. The planted native species are becoming more visible with each passing month.

The Friends have initiated a second phase of the restoration project by preparing a second 3-acre parcel of

Continued on Page 13

A robust four-wing saltbush, July 2018.

Great Plains Grassland Summit, April 2018

By Vicki Henderson, Pahove Chapter

In April of this year, I traveled to Denver to attend the Great Plains Grassland Summit. Funding for the trip was provided by an Education and Enrichment Award presented by the INPS Pahove Chapter. Thank you for allowing me this great experience to learn about the benefits and the challenges, management priorities, and research needs facing our National Grasslands today.

Attendees at the summit were from a very diverse group, and included representatives from government agencies, university professors and students, city and state agencies, tribal councils, conservation groups (such as INPS, Ducks Unlimited, Humane Society, Xerxes Society, American Bird Conservancy, The Nature Conservancy, World Wildlife Fund and more), and private companies and landowners.

The summit goals were presented by Deborah Finch, program manager at the Rocky Mountain Research Station, with six plenary speakers presenting information pertaining to the following themes: (1) working lands; (2) invasive species, native species; (3) wildlands and prescribed fire; (4) energy development; and (5) weather, water and climate. Each of the above groups met several times during the summit to put together a concise listing of what they considered to be their greatest opportunities, management priorities, research needs and barriers, and then plans to begin addressing them. Detailed reports from each of the working groups are scheduled to be published at a later date in the *Rangeland Ecology and Management Journal*: https://www.journals.elsevier.com/rangeland-ecology-and-management.

Breakout sessions featuring each of the themes were held to seek input from attendees to assist in decision making regarding the future management of grasslands. As a representative of the INPS, I attended the invasive and native species session. Employees of Denver Botanical Garden, U.S. Forest Service, U.S. Geological Survey, Natural Resources Conservation Service, a private land owner, an employee of a seed company, and an economist also participated in this session. Because of the large size of this group, it was broken up into smaller groups to discuss topics of concern. Each group was tasked to discuss a major challenge regarding native and invasive species, and include a history of prior management, define the opportunity and research necessary to resolve the challenge, and discuss what steps managers, scientists and stakeholders can take to work more effectively together.

Collaboration was the key word used over and over during the summit. In order to resolve conservation and other issues facing the Great Plains, government agencies, NGOs, researchers, and landowners must collaborate, by sharing their resources, communicating successes and failures, and allow for compromise. In Idaho, we are battling the same issues as in the Great Plains. Hopefully, the discussions and conclusions of the summit groups will be of great benefit to our state as well as those in the Great Plains.

As a concerned citizen, (not a botanist, biologist nor researcher), I want to thank the INPS Pahove chapter for allowing me this "once in a lifetime" opportunity—it was a great learning experience!

For more information on the Great Plains Grasslands, see: www.savingthewest.org.

Main presenters and topics

Working Lands: Conservation Grazing to Sustain Watershed Function, presented by Kenneth Tate from the University of California, Davis. Although livestock grazing has been linked to water pollution, degradation of soil structure, etc., Tate maintains the negative outcomes are results of poor management strategies. Conservation grazing strategies can enhance soils, reduce invasive plants, improve water quality, and stabilize wetlands.

Plant Invasions on Great Plains Grasslands; Status, Successes and Moving Forward, presented by John Gaskin, U.S. Department of Agriculture Agricultural Research Service, Montana. Gaskin reviewed the reasons why controlling invasive species is so difficult: including soil disturbances, conflicts between many different stakeholders, and bureaucracy. He noted failures to resolve problems were caused by a lack of collaboration between groups such as various government agencies, researchers, and land managers. The common approach for controlling invasive species has been to target the heaviest invasions and use the least amount of resources to remove the greatest quantity of the target species.

However, native plants and seed sources may be insufficient for native species to recover. He suggested another way to handle invasive species would be to prioritize keeping invaders out of uninvaded habitat, and to preserve these habitats by pushing back invaders. Tools used to fight off invasive plants include herbicides, biocontrols, mechanical removal, fire, grazing, and integ-

rated weed management strategies. For more information on native prairies and invasive plant species see: https://catalog.data.gov/dataset/native-prairie-adaptive-management-npam. An Invasive Plant Management Decision Analysis Tool is available at https://ipmdat.org/

Other presenters and topics

Thinking like a Grassland: Challenges and Opportunities for Biodiversity Conservation in the Great Plains of North America, presented by David Augustine, U.S. Department of Agriculture Agricultural Research Service.

Wildland and Prescribed Fire: Fire and Grassland: Is Fire a Tool or a Critical Ecological Process? presented by Sam Fuhlendorf, Department of Natural Resource Ecology, Oklahoma State University.

Weather, Water and Climate: Regional Co-Design and Co-Production of Research and Management Actions to Support Climate Change Adaptation Strategies for Managing Natural Resources in the Northern Great Plains, presented by Dennis Ojima, Colorado State University.

Energy Development in the Great Plains: Ecological Implications and Restoration Opportunities, presented by Jacqueline Ott, U.S. Forest Service, Rapid City, South Dakota. •

Dear Flat Restoration**.....Continued from Page 11**

land immediately to the north of Plot 1. Plans are to plant Plot 2 in the fall of 2018. Furthermore, the Friends and refuge staff have collaborated to create a brief interpretive brochure to educate visitors about native sagebrush-steppe plant communities. Copies of the brochure are on display in the Refuge Visitor Center.

Lessons Learned

1) The control of cheatgrass is very problematic because it is such a persistent competitor against all other plantings. We did not use the inhibiting bacteria as initially planned knowing previous trials on site and elsewhere did not show noticeable success rates and USFWS has strict rules concerning use of such agents.

2) Drill-seeding the bunchgrass seed did not work as well as we had initially hoped, but it did start germinating the second spring.

3) Friends members and the general public are interested in habitat restoration projects and many are generally willing to participate in hands-on activities. This interest was apparent when specific persons were invited and consented to lead groups of 5-10 volunteers during the main planting event on November 4, 2017.

4) Because of the dense/compact soils on the project site, digging with shovels during planting was required rather than using other planting tools. The digging effort soon wore out the enthusiasm of some volunteers. We did try out a power auger on one follow-up planting day, but the effort required was also quite prohibitive because of the hard soils and we could barely keep ahead of one or two planters. Case in point, we will try some better soil preparation on the next site; i.e. possibly disking and harrowing, to break up the soil for easier digging. Also, we will try to reduce the number of plants to be planted during any one session.

5) We did learn from literature sources and from people in the know, that by watering our seedlings as we plant them and following up with periodic watering during the first year, we will greatly increase their survivability. Our expectation is an 80% survival rate through the first year. Monitoring our study plots and photo points will give us an accurate record of how well the plants survive and how well they grow.

6) One additional note: The Friends plan on planting nursery-grown perennial forb seedlings on both Plots 1 and 2 in the fall of 2018. •

Sagebrush and bunchgrass seedlings growing among the ever-present cheatgrass, May 2018.

CALYPSO CHAPTER

When: Meetings are the first Wednesdays of March, April, May and October at 7:00 pm. Field trips take place during the spring, summer, and early fall months.
Where: Meetings are held in the conference room of Idaho Department of Fish and Game, 2885 W. Kathleen Ave., Coeur d'Alene.
Contact: Derek Antonelli, ds.ca.antonelli@gmail.com
Upcoming events:
October 3: Derek Antonelli will present on the structure and diversity of ferns.

LOASA CHAPTER

When: Meetings are held the third Thursday of each month at 7:00 pm.
Where: Taylor Building, Room 248, College of Southern Idaho, Twin Falls.
Contact: Bill Bridges, bridgesbill34@yahoo.com

PAHOVE CHAPTER

When: Meetings are held on the second Tuesday of each month from September–April at 7:00 pm. Dates, times, or topics are occasionally subject to change. Upcoming meeting information is sent to members via postcard and/or email. Events are also posted on the Pahove Chapter page of the INPS website: http://idahonativeplants.org/local-chapters/pahove/
Where: The MK Nature Center Auditorium, 600 S. Walnut Street, Boise.
Contact: For more information about activities please visit the Pahove Chapter page on the INPS website, or email Karie Pappani at pahove.chapter.president@gmail.com
Upcoming events:
October 9: Barbara Ertter will speak on "Yukon Botany: Bennett's BABY, Canadian Oil, and of course *Potentilla*."
November 13: Sean Finn with the Native Plant Network will talk about community and school group native plant projects across the Treasure Valley.
December 11: Movie Night (TBD).
Board Position Openings:
The Pahove Chapter is seeking a new board president. Our current president, Karie Pappani, has served the chapter exceptionally for 7+ years, and the time has come to select her successor. Additional board members, including someone to help with memberships, are also sought. Interested individuals are encouraged to contact the board at pahove.chapter.president@gmail.com.

SAWABI CHAPTER

When: Meetings are held on the third Monday night of October, November, January, February, March and May. Programs begin at 7:00 pm and refreshments are available afterwards. Each meeting is preceded by a short presentation on the plant family of the month.
Where: The Middle Fork Room of the Pond Student Union Building on the lower Idaho State University campus.
Contact: Paul Allen, pokyallen@hotmail.com
Upcoming events:
September 22: Plant walk to Goodenough Canyon just south of Pocatello. We'll meet there at 10:00 am, and after the walk have a picnic get-together. Bring your own picnic. Since this is a fall colors walk, the date is subject to change, but the local membership will be informed by e-mail if it is.
October 15: Paul Allen will present on his trip last spring to New Zealand.
November 19: Geoff Hogander will present on his trip to South Africa.
December: This will be the annual Christmas dinner, the date and location TBD.

UPPER SNAKE CHAPTER

The Upper Snake Chapter is currently inactive.
Contact: Rose Lehman, jojorose@cableone.net
If anyone is interested in reviving the chapter, they are welcome to contact Rose.

WHITE PINE CHAPTER

When: Meetings are held once a month except during the summer. Field trips can occur most any month. Please check the chapter website event calendar at www.whitepineinps.org for events which may be scheduled or finalized after *Sage Notes* is printed; or email the chapter officers at whitepine.chapter@gmail.com
Where: Great Room of the 1912 Building, 412 East Third St. in Moscow (between Adams and Van Buren) at 7:00 pm.
Contact: INPS White Pine Chapter, PO Box 8481, Moscow, ID 83843 or whitepine.chapter@gmail.com
Upcoming events:
October 11: Tanya Cheeke, Assistant Professor of Biological Sciences at Washington State University, will be speaking on transplanting mycorrhizal fungus to help restore prairie ecosystem. She has researched the role of mycorrhizal transplants in successfully restoring tall

grass prairie in Kansas. Native plant species are often more dependent on mycorrhizal fungi than are invasive species. When the fungi are disturbed, mycorrhizal-dependent native plants do not compete well with invasive species. She and her team are now testing the mycorrhizal responsiveness of some of the local Palouse prairie plants. This program is jointly sponsored by the White Pine Chapter and the Palouse Prairie Foundation.

November 29: Penny Morgan, Professor and Senior Fire Ecologist in the Department of Forest, Rangeland and Fire Sciences at the University of Idaho, will be speaking on the fire history and ecology of forest edges and forest islands in the Palouse Prairie.

WOOD RIVER CHAPTER

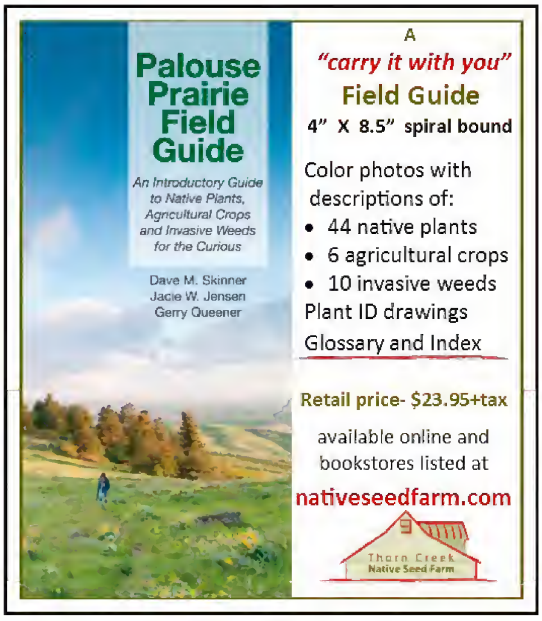
When: Meetings are held various weekday evenings beginning at 7:00 pm.

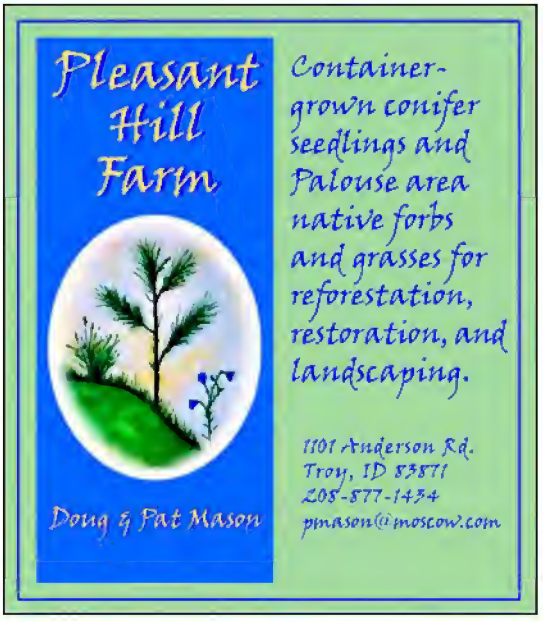
Where: Meetings are held at the Sawtooth Botanical Garden, located three miles south of Ketchum, on Highway 75 and Gimlet Road.

Contact: John Shelly at boshelly@cox.net for information about field trips and presentations. Also, check the Sawtooth Botanical Garden website (sbgarden.org) for updates on presentations. •

Orton Botanical Garden, Inc.
aka Plantasia Cactus Gardens
Large selection of Idaho and Great Basin native plants.
Cold hardy cacti, yuccas and other succulents.
Our 5-acre drought tolerant botanical garden is open by appointment April 1 to Nov 1.
Open house and plant sale held the last two weekends in May.
867 Filer Ave W, Twin Falls, Idaho 83301
Phone: 208-734-7959, cell: 208-308-6840
Website: www.ortonbotanicalgarden.com
Email: lorton1@msn.com

Thorn Creek
Native Seed Farm
1461 Thorn Creek Rd, Genesee, Idaho 83832
www.nativeseedfarm.com
"We are a 4th- generation family farm where the plants and the people are deeply rooted in the heritage of the land."
Wayne and Jacie Jensen
Bringing you authentic native forb seed from the Inland Northwest grasslands.
Source-identified and certified seed.
Grown on the fertile fields of the Palouse.
20 species available in packets, by 1/4 Oz., to Lb. increments.
Prairie mixes and custom mixes available.
Visit us at Thorn Creek Native Seed Farm:
www.nativeseedfarm.com
info@nativeseedfarm.com
(208) 596-9122




Pleasant Hill Farm
Container-grown conifer seedlings and Palouse area native forbs and grasses for reforestation, restoration, and landscaping.
Doug & Pat Mason
1101 Anderson Rd.
Troy, ID 83871
208-877-1434
pmason@moscow.com

IDAHO NATIVE PLANT SOCIETY
PO Box 9451, Boise, ID 83707
www.idahonativeplants.org
ADDRESS SERVICE REQUESTED

Find us on: facebook

Idaho Native Plant Society Membership Form

Name _____

Address _____

City/State _____ *Zip* _____

Phone _____ *E-Mail* _____

Chapter Affiliation:

□ Calypso (Coeur d'Alene)
□ Loasa (Twin Falls)
□ Pahove (Boise)
□ Sawabi (Pocatello)
□ Upper Snake (Idaho Falls)
□ White Pine (Moscow)
□ Wood River (Ketchum/Sun Valley)
□ No Chapter

Membership Level:

□ New □ Renewal
□ Senior $10
□ Student $10
□ Individual $17
□ Household $22
□ Sustaining $35+
□ Patron $100+

I would prefer to receive ***Sage Notes***: □ Print □ Electronic □ Both

Send completed form and full remittance to:
Idaho Native Plant Society
P.O. Box 9451
Boise, ID 83707

Memberships run calendar year. New memberships enrolled after June 1 include the following year. ***Renew or join online:*** *https://idahonativeplants.org/membership/*

Sage Notes is published quarterly by the Idaho Native Plant Society. Past issues can be viewed online at: https://idahonativeplants.org/sage-notes/

Submissions: Members and non-members may submit material for publication. Relevant articles, essays, poetry, news, announcements, photographs and artwork are welcome. Authors, artists and photographers retain copyright to their work and are credited in *Sage Notes*. Send all submissions electronically to the editor at the link below. Please provide a phone number and/or email address with your submission. Submission deadlines are January 8, April 1, August 1 and November 1.

Advertising: Advertisements help reach environmentally-minded, native plant-loving customers and help support INPS. Prices: 1/8 page = $5, 1/4 page = $8, 1/2 page = $15. Submit ads electronically to the editor (JPG, TIFF, PSD or PDF files). Send payment to: Sage Notes Ads, P.O. Box 9451, Boise ID 83707.

Editor: Michael Mancuso, sage-editor@idahonativeplants.org

Vol. 40 No. 4 December 2018

Sage Notes

Newsletter of the Idaho Native Plant Society • Promoting Interest in Idaho's Native Flora

Seed Conservation: A Necessary Tool for Uncertain Future

By Angela C. Sondenaa, PhD, Nez Perce Tribe Wildife Division

Seeds hold both the history of evolution and a promise for the future. They are miraculous instruments of life-giving DNA all packaged and waiting for their opportunity to emerge from the darkness. Is it any wonder that humans have been fascinated by them for eons? Botanists, and especially modern-day botanists who are staring human-induced climate change straight in the face. Will seeds be our planet's salvation in an uncertain future? The developers of the Millennium Seed Bank Project at Kew Gardens seem to think so, as do the creators of the Svalbard Global Seed Vault located in Norway. I tend to agree with them.

Since 2006 the Nez Perce Tribe has been collecting seeds from locally rare species and depositing them into a regional seed bank dedicated to the conservation of rare plants. This seed bank was initially started as the Berry Botanic Garden Seed Bank and has subsequently evolved into the Rae Selling Berry Seed Bank at Portland State University. The collection currently houses over 23,000 accessions from more than 350 rare taxa. A new partnership with the Seeds of Success program is likely to swell the collection considerably in the years to come.

Tribal interest in cryopreservation of native plant seeds arose from the dire condition of prairie communities within the Nimiipuu homeland in northcentral Idaho. A recent assessment by tribal botanists estimates that only 0.4% of the Nez Perce Prairie of the southern Palouse Bioregion remains intact after 140 years of agricultural conversion and other developments (Robins and Sondenaa 2015). The entire ecosystem is endangered, but it still holds remnant populations of regionally endemic native plants that are both scientifically and culturally valuable. We are taking action to try and save what's left. It hasn't been easy, but we are after all, an intrepid bunch of botanists (well, there's really only two of us right now, but we are tenacious nonetheless).

Using funding from the U.S. Fish and Wildlife Service, we have deposited 69 seed collections from 16 different taxa into the Rae Selling Berry Seed Bank. This collection represents seeds from 2,700 individual maternal plants, including 139 Federally Threatened Spalding's catchfly (*Silene spaldingii)* plants from seven sites across three states.

Right about now you might be saying "Is that all? Not much to brag about if you ask me." Let me disabuse you of that notion: collecting rare plant seed is hard work that requires a healthy dose of luck and persistence to pull off. It is absolutely worth it though! There's nothing quite like getting those 20 packets of precious seeds back to the pickup truck at the end of the day despite the 100°

Continued on Page 4

In this issue:

Seed Conservation: A Necessary Tool..... 1
Letter From the President.....2
Announcement..... 3
Meat Eating Plants of Idaho..... 6
Disproving Reports of Intermediate Sundews..... 8
Flora of the Pacific Northwest, 2nd ed. Available.. 10
ERIG: Solicitation for Proposals..... 11
ERIG: Carol's Wildflower Garden Project.....12
ERIG: Alpine Rock Garden Project.....13
Chapter News.....14

IDAHO NATIVE PLANT SOCIETY
PO Box 9451, Boise, ID 83707
www.idahonativeplants.org
public3@idahonativeplants.org

INPS BOARD
President: Stephen Love
Vice-president: Tony McCammon
Secretary: Janet Bala
Treasurer: Karen Getusky
Membership: Derek Duval
Past-President: LaMar Orton
Member-at-Large: Mel Nicholls

CALYPSO CHAPTER
821 W. Mustang Ave.
Hayden, ID 83835
President: Derek Antonelli
Vice President: Vacant
Secretary: Karen Williams
Treasurer: Laura Asbell
Newsletter: Karen Williams

LOASA CHAPTER
340 E 520 N.
Shoshone, ID 83352
President: Bill Bridges
Vice President: Valdon Hancock
Member-at-Large: Kelvin Jones

PAHOVE CHAPTER
PO Box 9451, Boise, ID 83707
pahove.chapter@gmail.com
President: Karie Pappani
Vice President: Susan Ziebarth
Secretary: Daniel Murphy
Treasurer: Caroline Morris

SAWABI CHAPTER
1506 N. Mink Creek Road
Pocatello, ID 83204
President: Paul Allen
Vice President: Geoff Hogander
Secretary: Barbara Nicholls
Treasurer: Linda Edwards

UPPER SNAKE CHAPTER
Currently Inactive

WHITE PINE CHAPTER
PO Box 8481, Moscow, ID 83843
whitepine.chapter@gmail.com
President: Judy Ferguson
Vice President: Pam Brunsfeld
Secretary: Charlotte Omoto
Treasurer: Steve Bunting

WOOD RIVER CHAPTER
PO Box 3093, Hailey, ID 83333
President: John Shelly
Vice President: Lisa Horton
Secretary: Jeanne Cassell
Treasurer: Carol Blackburn

Letter from the President

Most of us are somewhat familiar with the ERIG (Education Research Inventory Grants) program that is maintained by our organization. Through this grant program, we make up to $2,000 available for worthy native plant conservation and education programs. The demand for these grants has been growing rapidly during the past few years, but our level of disbursement has not changed much, due to a relatively static level of funding. This past two years, projects ranged from supporting establishment of community pollinator gardens to taxonomic research on critically endangered species. However, we have not been able to fund these projects at the full level of requested support. We simply have not had enough money to support all of these very worthy grant applications that have come to the Society.

We, as an INPS Board, have been discussing ways to encourage more donations to the ERIG program in order to strengthen our offerings for conservation projects. We will likely do a little fund raising at our annual meeting—this next year it appears that the Pahove Chapter is putting together a silent auction. We are also exploring ways to encourage members to donate to ERIG during their annual membership registration. If we could convince each member to donate $10, we would triple the funds available for grants. This year, we are also exploring the efficacy of investing time into the Giving Tuesday and Idaho Gives internet-based charitable giving programs. If these efforts prove effective, we will put more energy into them in future years.

I hope you see the positive benefits of the ERIG program and donate what you can to strengthen our ability to conserve our native plants and to educate the people of Idaho as to their importance. Thank you for being a part of this great organization.

Stephen Love,
INPS President

Editor's Note: Donations may be made via the INPS website (https://idahonativeplants.org/erig-news/). Projects which have been funded are shown in a table. As part of project completion, recipients submit a report for publication in *Sage Notes*. Two of these are found in this issue.

Announcement

2018 Botanical Foray Plant Identification Workshops

After a successful 11th Annual Idaho Botanical Foray last June, we have hundreds of plants that need to be identified. There will be upcoming Identification Workshops that you are all invited to attend if you would like to participate in the identification of those plants. All are welcome regardless of experience. For more information, please contact Don Mansfield (dmansfield@collegeofidaho.edu) or Beth Corbin (botanybeth@gmail.com).

February 7, 6:30 pm: SRP Herbarium, Boise State University (Science Building, 2nd Floor)
March 7: Time and location TBA

2019 INPS Annual Meeting

The Pahove Chapter is delighted to announce that the 2019 INPS annual meeting will be held in McCall, Idaho, Friday, July 12, 2019–Monday, July 15, 2019. Located in central Idaho, McCall is about 5 hours south of Coeur d'Alene, 5.5 hours northwest of Pocatello, and 2 hours north of Boise, a location convenient for many members across the state to attend.

Our activity base will be the Peninsula Campground at Ponderosa State Park next to Payette Lake. Pahove has reserved 11 campsites and a pavilion. This area of the Park has water and electric hook-ups, picnic tables, and bathhouses with flush toilets and hot showers. In addition to its diverse botany, the McCall area offers many local recreational opportunities such as biking, bird watching, boating, hiking, brew pubs, etc.

The INPS website will list McCall motels/hotels, restaurants, RV parks, and other camping options. Reserve promptly—McCall is a busy summer tourist destination. If you want a Peninsula camp site, then ASAP! inform Pahove Treasurer Caroline Morris (fleursmorris@gmail.-com), to designate one of the 11 campsites for you. Ten sites are reserved for 3 nights, and 1 reserved for 2 nights @ $31/night (deposit needed). We also will have exciting give-a-ways and a silent auction to raise funds for ERIG.

Memorable field trips will accommodate easy and moderate to strenuous activity levels. Easy hikes will be a half day on mostly level terrain. Moderate to strenuous hikes will be all day with significant elevation gain and/or distance.

More details and a meeting registration form will be posted on the INPS website when all field trips are known.

Tentative Schedule

Friday afternoon

Check in/registration/information packets 12:00 pm–6:00 pm, Peninsula Campground Pavilion, Ponderosa State Park.
Twin Peaks Nursery Tour, 1:00 pm–2:00 pm
INPS State Board meeting, 3:00 pm–5:00 pm
Potluck at the Park Pavilion, 6:00 pm (Please bring something to share with the group.)

Saturday

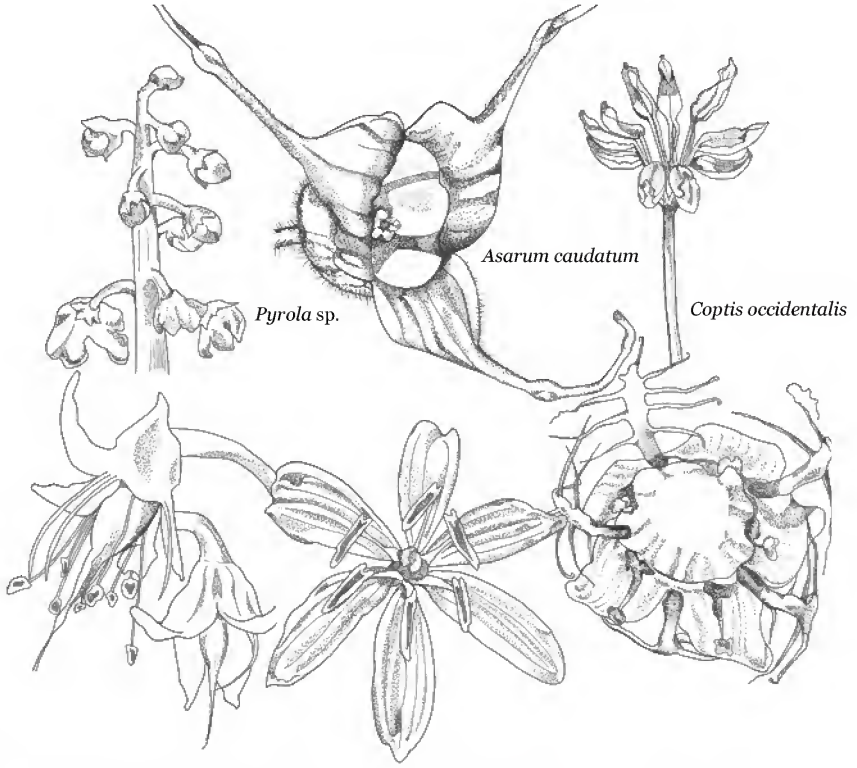
Lichen Workshop led by Roger Rosentreter and field trips to view some spectacular specimens.
Field trips.
Banquet and Business Meeting 6:00 pm–7:30pm.
Keynote Speaker Barbara Ertter, a longtime botanist and INPS member, will describe the flora and geology of the McCall area, 7:30pm.

Sunday

Field trips.
Dinner on your own.

Monday

Optional field trips.



Collage of close-ups of Northern Idaho flowers. Illustration by Karie Pappani.

Seed Conservation.....*Continued from Page 1*

heat, five ticks, and 85% slopes that tried to deter you along the way.

I encourage all of you to consider getting involved in ex-situ seed conservation in one capacity or another. Toward that end, below are some words of wisdom.

1) Make sure you have permission to collect from the landowners and make sure you are actually on their land. With Idaho's new trespass law now in effect, none of your fellow botanists want to read about your untimely demise at the hands of an angry rancher who caught you poaching his lady slippers.

2) Always scout your plant population well in advance of seed set. What you remember as a large robust population from 10 years ago may now be a few struggling individuals drowning in a sea of yellow starthistle. A bummer for all of you!

Flowers and maturing fruit of broad-fruit mariposa lily (Calochortus nitidus). Photo by Blair McClarin.

3) Plan for multiple visits when seed ripening is imminent. Timing is everything and what happened last year may not be repeated this year. Be patient but persistent.

4) Every species is different. You may have to get intimate with your target species to be able to navigate the nuances of their seed ecology: does it produce few viable seeds, are seed predators a problem, does it flower episodically? It's all part of the adventure so enjoy the journey.

5) Don't collect unripe seeds! I repeat, don't collect unripe seeds! It may be tempting because you've forded the river and scaled the cliff to the site, but it is a huge waste of effort and genetics to come away with pale, flat ovules interrupted in mid-development. Just don't do it.

6) Pamper your seeds once you collect them. Don't throw them in the bottom of your pack and dump the new *Flora of the Pacific Northwest* on top of them for the hike out, or forget and leave them in the hot Suburban over the long weekend. Always collect into paper bags (never plastic) and store seeds in a cool, dry place until you ship them off in well-padded boxes to the seed bank.

7) Be tidy. Remove extraneous plant material from your collections before storing or shipping. After all, you don't want to inadvertently harbor unwanted pathogens or hungry insects that may damage your seeds.

8) Don't forget the paperwork! Always fill out your seed collection forms completely, use your GPS unit, take photos, and collect voucher specimens if the population is big enough. Such data are invaluable as our plant communities change over time.

9) Coordinate closely with your seed bank of choice. Listen and learn from them to make sure you share common objectives and collect in a manner that meets their criteria and results in genetically valuable samples. The future of our planet may well depend on it.

Lovely pendulant pods of hillside milkvetch (Astragalus collinus var. collinus). Photo by Blair McClarin.

Given the latest dire warnings about the scope and scale of climate change, it seems especially urgent that we prepare for the worst-case scenario with regards to our planet's biodiversity. Recent reports by the United Nations and the Federal Government both point to a more rapid rate of climate change than originally thought. A rapidly changing climate coupled with ongoing habitat loss, environmental pollutants, and other conservation challenges provide abundant justification for using seed banking as a conservation tool. The time for action is now and ex-situ seed conservation looks to be a valuable part of emergency preparedness for saving Earth's biodiversity.

There is hope. A few years ago viable tissue recovered from 32,000-year-old seeds of *Silene stenophylla* found in Russian permafrost was successfully grown in the lab and those plants later produced mature seeds of their own. See, I told you seeds are miraculous! •

Botanist Blair McClarin diligently searching for spacious monkeyflower (Erythranthe ampliata/Mimulus ampliatus) fruit. Photo by Sandra Robins.

References and Resources

Idaho Trespass Law 2018: https://legislature.idaho.gov/wp-content/uploads/sessioninfo/2018/legislation/H0658.pdf

Millennium Seed Bank Project: https://www.kew.org/science/collections/seed-collection

Rae Selling Berry Seed Bank: https://www.pdx.edu/seed-bank/the-seed-bank

Robins, S., and A. C. Sondenaa. 2015. Palouse Prairie Conservation on the Nez Perce Indian Reservation Phase I: Mapping of Potential Remnants. Unpublished Fish and Wildlife Program (#F14AP00640) report submitted to US Fish and Wildlife Service, Spokane, WA.

Seeds of Success: https://www.blm.gov/programs/natural-resources/native-plant-communities/native-plant-and-seed-material-development/collection

Silene stenophylla article: https://news.nationalgeographic.com/news-/2012/02/120221-oldest-seeds-regenerated-plants-science/

Svalbard Global Seed Vault: https://www.seedvault.no/

United Nations Climate Report: http://www.un.org/en/climatechange/

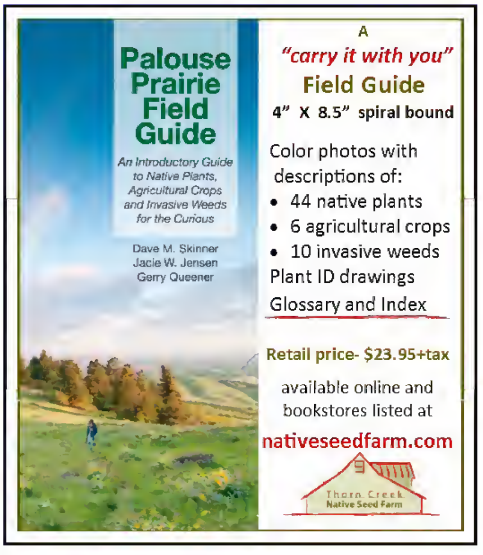
USA Climate Report 2018: https://nca2018.globalchange.gov/

USDA Agricultural Research Stations Seed Preservation Program: https://www.ars.usda.gov/plains-area/fort-collins-co/center-for-agricultural-resources-research/plant-and-animal-genetic-resources-preservation/docs/seed-collections/

USDA Forest Service Nurseries and Seed Extractories: https://www.fs.fed.us/forestmanagement/vegetation-management/nurseries/index.shtml

Thorn Creek
Native Seed Farm
1461 Thorn Creek Rd, Genesee, Idaho 83832
www.nativeseedfarm.com
"We are a 4th- generation family farm where the plants and the people are deeply rooted in the heritage of the land."
Wayne and Jacie Jensen
Bringing you authentic native forb seed from the Inland Northwest grasslands.
- Source-identified and certified seed.
- Grown on the fertile fields of the Palouse.
- 20 species available in packets, by 1/4 Oz., to Lb. increments.
- Prairie mixes and custom mixes available.
Visit us at Thorn Creek Native Seed Farm:
www.nativeseedfarm.com
info@nativeseedfarm.com
(208) 596-9122

Orton Botanical Garden, Inc.
aka Plantasia Cactus Gardens
Large selection of Idaho and Great Basin native plants.
Cold hardy cacti, yuccas and other succulents.
Our 5-acre drought tolerant botanical garden is open by appointment April 1 to Nov 1.
Open house and plant sale held the last two weekends in May.
867 Filer Ave W, Twin Falls, Idaho 83301
Phone: 208-734-7959, cell: 208-308-6840
Website: www.ortonbotanicalgarden.com
Email: lorton1@msn.com


Palouse Prairie Field Guide
An Introductory Guide to Native Plants, Agricultural Crops and Invasive Weeds for the Curious
Dave M. Skinner
Jacie W. Jensen
Gerry Queener
A
"carry it with you"
Field Guide
4" X 8.5" spiral bound
Color photos with descriptions of:
- 44 native plants
- 6 agricultural crops
- 10 invasive weeds

Plant ID drawings
Glossary and Index
Retail price- $23.95+tax
available online and bookstores listed at
nativeseedfarm.com

Idaho Wildflowers
Plant Identification App
Contains information for more than 800 plant species
Designed for experts and beginners
Order online at: www.highcountryapps.com
GET IT ON Google Play
Download on the App Store
$7.99

Pleasant Hill Farm

Container-grown conifer seedlings and Palouse area native forbs and grasses for reforestation, restoration, and landscaping.
1101 Anderson Rd.
Troy, ID 83871
208-877-1434
pmason@moscow.com
Doug & Pat Mason

Meat Eating Plants of Idaho

By Lauren Studley and Lynn Kinter, Idaho Native Plant Society

Dry, cold Idaho may seem like an unlikely place for carnivorous plants. But like the famous Venus flytrap from steamy swamps of North Carolina, some Idaho plants catch and digest insects and other small organisms. They do so to obtain nitrogen and other nutrients, which often are not available due to low pH and leaching in water-logged habitats (Rice 2018). While wetland habitats are not as common in Idaho as in North Carolina, our native carnivorous plants are just as amazing.

Sundew (*Drosera*) in the Sundew family (Droseraceae)

Sundews are small forbs with spiny-looking leaves. These 'spines' are actually stalks with a gland on top that emits dew-like drops of 'glue' to trap unwary insects that land on them, much like flypaper does. As the insect struggles, the sundew leaf slowly wraps around the insect, further trapping it. Stalkless glands on the surface of the leaf then secrete enzymes that digest the insect and absorb nutrients.

In Idaho, sundews grow in mid-elevation fens, wet meadows, and lakeshores. Their bright green leaves speckled with red stalks form low rosettes (<10 cm tall), and their translucent drops of glue sparkle in the sun. Plants usually produce one or two inflorescences bearing several white, five-petaled flowers. The flowering stems are markedly taller than the leaves, probably so that pollinators aren't trapped. The plants are perennial and form hibernacula—buds of tightly curled leaves—to survive the long, cold Idaho winters.

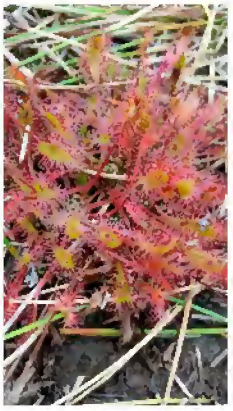
Two species of sundew are documented in Idaho. **Roundleaf sundew** (*D. rotundifolia*) has prostrate leaves shaped like ping-pong paddles, hence the species name, which is Latin for 'round leaf.' Ours is 'variety *rotundifolia,*' the most widespread of three varieties. It is known from Idaho's northern panhandle, as well as Idaho County. It is also found on the Pacific Coast, the northern and eastern US, and across Canada, Northern Europe and Asia (McPherson & Schnell 2012).

Drosera rotundifolia in a northern Idaho fen. Photo by Marilyn George.

A third species, **intermediate sundew** (*D. intermedia*), has been falsely reported for Idaho (see the related article on Page 8).

Charles Darwin (1875) used roundleaf sundew to show that plants did, in fact, eat animals. Prior to his work, most botanists did not accept that plants could be 'insectivorous.' Darwin tested various substances, including meat, sugar, urine, and olive oil, and found that sundew leaves reacted only to substances containing nitrogen.

English sundew, or great sundew (*D. anglica*), has slender, strap-like leaves that ascend upward at an angle of >45° from the ground. It was first described in England, and is found at higher latitudes around the globe, as well as a few southern areas, including Hawaii and California. In Idaho, this beautiful sundew is known from the northern part of the panhandle, with isolated occurrences in Valley, Custer, and Fremont Counties.



Drosera anglica in an Idaho fen. Photo by Lauren Studley.

As popular houseplants, sundews are susceptible to overharvest in some parts of their global range. Other threats include pollution, siltation, peat mining, and water diversion. Drought can be lethal to the plants, but populations sometimes regenerate from their soil seed bank. Fire suppression can lead to encroachment of shrubs and trees that shade out the sundews. Ants, spiders, and toads are known to steal prey from sundew leaves and can be direct competition when insects are in short supply (McPherson & Schnell 2012).

Bladderwort (*Utricularia*) in the Bladderwort Family (Lentibulariaceae)

Idaho is also home to *Utricularia*—the fascinating bladderwort! Its scientific name is Latin for 'little bag'. Its common name refers to bladders along its underwater stem, along with 'wort'—the Old English word for 'plant'. These bladders pump fluid out of their interior, and have a trap door with trigger hairs. As a prey animal swims by, the door snaps inward, allowing water and prey to rush in, then slams shut. The time span of suction itself is half a millisecond—the fastest trapping movement of all carnivorous plants, and among the fastest movements known in the plant kingdom (Vincent et al. 2011). New Jersey botanist Mary Treat, working in the 1870s, was the first to describe their suction mechanism, which had been an enigma to researchers of that time. Suction traps

are found only in Utricularia; other carnivorous plants use different mechanisms, such as snap traps and pitfalls (Rice 2018).

Utricularia macrorhiza with bladders. Photo by Lynn Kinter.

While some bladderworts are terrestrial, the Idaho species float or are rooted in shallow, slow-moving waters of fens, streams, ponds, and lakes. They often band together and form large floating mats. To ride out Idaho winters, our bladderworts produce small bulb-like buds, known as turions, which sink to warmer strata at the bottom of the water column.

All Idaho bladderwort species have yellow flowers that resemble those of snapdragons, with the petals fused to form an upper lip, lower lip, and spur. In field surveys, bladderworts are often found without flowers, but can be identified based on leaf, branch, and turion traits. Some of our species are perennial, others annual, or both.

Utricularia with its snapdragon-like flower. Photo by Lynn Kinter.

Common bladderwort (*U. macrorhiza*, *U. vulgaris* ssp. *macrorhiza*) is Idaho's largest and most widespread species. Found throughout the northern, central, and eastern parts of the state, it is easily spotted when its bright yellow flowers up to 20 mm long rise above the water surface some 20 cm.

Lesser bladderwort (*U. minor*) is minuscule compared to common bladderwort. Its pale yellow flower is only 8 mm long, and the lower lip juts out well past the upper lip. It is known in Bonner, Boundary, Custer, Fremont, and Boise Counties. It is also found across the northern and western US, and is of conservation concern in many states, including Idaho.

Flatleaf bladderwort (*U. intermedia*), with flowers up to 16 mm long, is intermediate in size between common bladderwort and lesser bladderwort. It is reported from Boundary, Bonner, Kootenai, Teton, and Bear Lake Counties. Its range across the US is similar to lesser bladderwort.

Humped bladderwort (*U. gibba*) has flowers up to 12 mm long. Its specific epithet is Latin for 'hump' or 'swelling' in reference to the inflated base of the lower lip of the corolla. This species is documented in Bonner, Custer, Fremont, and Kootenai Counties, but most US reports are on the west coast, and the eastern and central states.

At our 2018 Idaho Rare Plant conference, humped bladderwort was moved from 'Review' to 'Rare' on the Idaho Rare Plant List. INPS ranked it 'S1—Critically imperiled' in the state due to few occurrences and high threats, including hydrologic change, development, and fire suppression resulting in trees and shrubs encroaching and shading formerly open sites. Flatleaf bladderwort and lesser bladderwort also are in need of conservation status ranking.

Other carnivorous plants

In addition to bladderworts and sundews, **California butterwort** (*Pinguicula macroceras*, *P. vulgaris* ssp. *macroceras*) may occur in Idaho. Kartesz/BONAP (2018) and USDA Plants Database (2018) report it from our state based on Casper (1962, 1966), however Casper shows only crude range maps that include the northern tip of Idaho—he does not cite any collections. Ray Davis (1952) noted that it "should be in Idaho, but I have never seen a collection of it." California butterwort was collected in northeastern Washington on the Pend Oreille River in 1969 and 1979, and in 1937 on the Kootenay River in southern British Columbia (CPNWH 2018), so INPS members in northern Idaho should keep an eye out for it.

California butterwort grows in shady seeps and river banks. With pale to dark purple flowers, it looks at first glance like a tall violet. Its leaves are often yellow or rusty orange, and form a low rosette. The upper surface is covered with sessile and stalked mucus glands—much like sundew (McPherson & Schnell 2012). The common name is related to use of the leaves to curdle milk and treat udder ailments, and possibly because they feel buttery. 'Pingui' is Latin for fat, greasy, or stout (McPherson & Schnell 2012).

There are no records of **pitcher plant** (*Sarracenia)* in Idaho, though it is known from central Washington. California pitcher plant, or cobra lily, (*Darlingtonia*) is limited to the western parts of California and Oregon. Both genera use pitfall traps—long narrow upright tubes with a pool of digestive liquid at the bottom.

Idaho is far from the native range of **Venus flytrap** (*Dionaea muscipula*), which is limited to a small area on the North Carolina/South Carolina border. However, this fascinating carnivore is naturalized at Summer Lake in Skagit County, Washington.

In addition to the genera described above, one other carnivorous plant is native to North America. **Powdery-strap air plant** (*Catopsis berteroniana*) looks like a giant pineapple top, and is in the same family—the

Continued on Page 8

Meat Eating Plants*.....Continued from Page 7*

bromeliad family (Bromeliaceae). Living on trees in Florida, its strap-like leaves form a tank that holds rainwater. A powdery coating on the leaves causes insects to lose traction and fall into the water, from which the plant can absorb nutrients.

Carnivorous plants are uncommon in Idaho in part because their wetland habitats are uncommon. Their habitats can also be hard to reach. When you happen upon one of Idaho's delicate fens or slow meandering waterways, be sure to keep an eye out for these carnivorous gems. •

Literature cited

Casper, S.J. 1962. On *Pinguicula macroceras* Link in North America. Rhodora 64: 212-221.

Casper, S.J. 1966. Monographie der Gattung *Pinguicula* L. Bibliotheca Botanica, Heft 127/128. Schweizerbart, Stuttgart.

Consortium of Pacific Northwest Herbaria (CPNWH). 2018. Specimen Database. Accessed 1 Dec 2018 at http://www.pnwherbaria.org

Darwin, C. 1875. Insectivorous Plants. John Murray, London.

Davis, R.J. 1952. Flora of Idaho. Wm. C. Brown Co., Dubuque.

Kartesz, J.T. 2018. North American Plant Atlas. The Biota of North America Program (BONAP). Chapel Hill. Accessed 1 Dec 2018 at http://bonap.net/napa

McPherson, S., & D. Schnell. 2012. Field Guide to the Carnivorous Plants of the United States and Canada. Redfern Natural History Productions, Dorset.

Rice, B. 2018. The Carnivorous Plant FAQ. Accessed 1 Dec 2018 at http://www.sarracenia.com/faq.html

USDA, NRCS. 2018. The PLANTS Database. National Plant Data Team, Greensboro. Accessed 1 Dec 2018 at http://plants.usda.gov

Vincent, O., et al. 2011. Ultra-fast underwater suction traps. Proc. Royal Society B 278: 2909–2914.

Disproving Reports of Intermediate Sundews in Idaho

By Lynn Kinter, Idaho Department of Fish and Game

How do we 'prove' that something doesn't exist? As the maxim goes, "Absence of evidence is not evidence of absence."

It can be extremely difficult to demonstrate that a particular plant species doesn't exist in Idaho once someone has reported that it does. Field searches for the plant may turn up nothing, but we can't conclude the plant isn't there—it may be dormant underground or hidden in some unseen corner. It may have been extirpated since the first report, or the original location data may have been recorded or interpreted incorrectly so that subsequent searches are in the wrong place.

In the last decade, I've investigated several claims of which I was skeptical. In some cases, such as spider milkweed (*Asclepias asperula*) and alpine poppy (*Papaver radicatum)*, I was able to find verified specimens and conclude that the plant is, or at least was, present. In other cases, including horsetail milkweed (*Asclepias subverticillata*) and pincushion cactus (*Escobaria vivipara)*, I and others have invested a great deal of time, traveled to far corners of the state, combed herbarium collections, contacted experts, and sorted through scientific literature—only to find an absence of valid records.

One particularly frustrating case was intermediate sundew (*Drosera intermedia*), which is widespread across eastern North America. The first Idaho report of this carnivorous plant was in Boundary County by Rob Bursik (1993): "Prior to 1992, it was not known from the Pacific Northwestern U.S. I found a rather dense but localized population of several hundred individuals in the Smith Creek RNA [Research Natural Area] while doing this study... Although I and other botanists had previously visited SCRNA, no one had recognized the individuals of intermediate sundew as being different than the individuals of long-leaf sundew [=English sundew] (*D. anglica*), which also occurs in SCRNA. Both round-leaf sundew (*D. rotundifolia*) and long-leaf sundew occur in [nearby] Cow Creek Meadows. The discovery of intermediate sundew represents yet another recent state record in the vascular peatland flora in Idaho."

Bursik gives no details on how his state record differs from the other two sundews, nor does he cite an herbarium specimen. His record is documented in the Idaho Natural Heritage Program (INHP) database as 'Element Occurrence (EO) 1, Smith Creek RNA': Rob Bursik 10 Aug 1992. "~500 genets" over 2 ha (0.02 sq km). The EO 1 report cites a collection by University of Idaho botanist Doug Henderson, 5161, housed at UI's Stillinger Herbarium (ID). However, in checking this specimen, I found that it is *Eriogonum capistratum* collected 24 Jun 1979 near Corral Creek Summit, Custer County—it has no connection to Smith Creek or *Drosera*. Notably, there is a

D. anglica collection by Rob Bursik (1390, 22 Jul 1988, ID) from Smith Creek RNA.

In 1993, Bob Moseley, Bursik, et al. (1994) report two more intermediate sundew occurrences: Mays Creek Fen and Huckleberry Creek Fen in the Sawtooth Valley Peatlands RNA, Custer County. They emphasize that these are the only other known sites in Idaho, and are far disjunct from the known range. They recommend that their collections be sent to ID for verification.

The same report (Moseley et al. 1994) states, "The sundew at Mays Creek Fen had been erroneously identified as *D. rotundifolia* for many years. *D. intermedia* is the only sundew known from the Sawtooth Valley." This statement puzzles me because in 1994, ID had a collection of *D. anglica* from the Sawtooth Valley: Louis K. Mann 215, with C. Worley, 29 Jul 1936. Mann, a Boise native, was then a UI undergraduate; he went on to become a prominent professor at University of California, Davis, where a building is named in his honor. The accession number on his *D. anglica* collection indicates it would have been in the herbarium long before the 1990s, or even the 1980s, when Moseley and Bursik worked in the herbarium as Masters students. I also worked there in the 1980s, and in now picturing the steps they would have taken before making their statement, it seems to me that they would have examined the *Drosera* collections. Perhaps they did, but Mann's collection could have been misfiled or out on loan.

The Sawtooth Valley EOs (Element Ocurrences) are documented in the INHP database: EO 2, Mays Creek Fen: Moseley and Bursik, 10 Aug 1993. Revisited by Mabel Jankovsky-Jones and Chris Murphy, IdCDC, 12 Sep 2001. "Many thousands of individuals" over 40 ac (0.16 sq km). Herbarium collection by Rob Bursik 2938, ID. EO 3, Huckleberry Creek Fen: Moseley and Bursik, 10 Aug 1993. "Many thousands of genets" over 10 ac (0.04 sq km). Herbarium collection by Rob Bursik 2954, ID.

On 29 Nov 2016, my colleague Janice Hill searched the stacks at ID and reported: "ID has only 2 *D. intermedia* specimens (Chuck Wellner 4357 and Bob Steele 779); both were originally identified as *D. anglica* and hand-annotated as *D. intermedia*. Carolyn Ferguson [ID employee] and I compared the handwriting on the annotations to that of Doug Henderson's in his collection journals and decided it probably was not Doug's handwriting. The Stillinger Herbarium has the entire set of Doug's collection journals. Checking Doug's journals for the 10 Aug 1992 date at Smith Creek RNA, I could not find any collections made by him on that date.

"As regards the possibility of a backlog of Rob's [Bursik] specimens to be mounted and/or scanned, we checked all our cabinets of unmounted specimens and found none of Rob's. As far as scanning, we are almost done scanning the entire collection (finishing the last family, Asteraceae). Also checked through a backlog of specimens to be imaged, but they are mostly recently mounted specimens from Dave Tank's summer class collections; found none of Rob's."

To me, it seems likely that Bursik's collections would have been validated before the Idaho Native Plant Society added the species to the Idaho Rare Plant List in ~1993. However, I can find no specimens of *D. intermedia* (present or former identification) by Henderson, Bursik, or Moseley in ID, nor any of several electronic databases that I've searched. Michael Mancuso and I contacted Bursik repeatedly through the years to ask about his collections. On 13 Jun 2017, he responded that he had the specimens in Minnesota and would send them to ID the following week. To date, they have not been sent.

I looked at Chuck Wellner's collection 4357 from Smith Creek, Boundary County, 6 Jul 1990, and Bob Steele's collection 779 from "near Summit Creek" in Valley County, 5 Jul 1974. Both were originally identified as *D. anglica*, which looks correct to me. Both have *D. intermedia* annotations in similar handwriting, but no author or date.

The reports by Moseley and Bursik may be the basis for two USDA PLANTS Database records (2016) in the Sawtooth Valley Peatlands RNA: "Kim Pierson, 10 Aug 1993. Field observation validated by National Plant Data Team staff. . . Identification method: Comparison of herbarium specimens." Kim Pierson, former Botanist on the Sawtooth NF, may have made collections on which the USDA records are based, but I have not been able to locate the specimens, nor get a response from her about them. Current Sawtooth NF botanists Deb Taylor and Thomas Stewart have searched herbaria at all Sawtooth NF offices, and cannot find the specimens.

I checked with Larry Mellichamp about his *Flora of North America* treatment (2015), which lists Idaho for *D. intermedia*. He emailed (pers. comm. 14 Nov 2016), "It has been years since I looked at herbarium specimens of *Drosera*. So, I can say that I do not remember a specimen from Idaho. It is listed in FNA as in Idaho—my editors did more checking at the last minute than I did and listed it there, usually based on literature citations."

In addition to looking for herbarium specimens, I pursued other leads. John Kartesz's (2016) data in the Biota of North America Program are based on the three Idaho Natural Heritage Program records. Ray Davis (1952) doesn't list it in the *Flora of Idaho*. I presented my

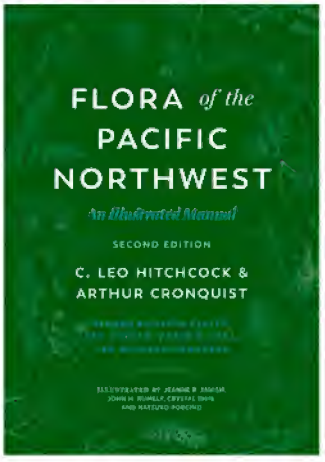
Continued on Page 13

Flora of the Pacific Northwest, 2nd Edition is Now Available

By David Giblin, Ph.D., University of Washington Herbarium, Burke Museum

The University of Washington Herbarium of the Burke Museum is pleased to announce the publication of *Flora of the Pacific Northwest*, 2nd Edition. It has been 45 years since C. Leo Hitchcock and Arthur Cronquist published their groundbreaking one-volume, condensed version of the 5-volume *Vascular Plants of the Pacific Northwest*. Given the universal appeal of this remarkable book, we thought the time had come to update it.

For decades academic researchers, field botanists, students, and amateur botanists have relied on the one-volume of "Hitchcock" to identify and understand the evolutionary relationships of the region's vascular plants. One is hard-pressed to find another regional flora with such well-honed keys supported by a comprehensive set of illustrations. It is just this combination that made the one-volume *Flora* such an indispensable resource. However, the passage of 45 years has a way of rendering any flora obsolete due to the generation of new knowledge over such a timespan. This has probably never been so true as for the past 45 years.



When the original *Flora* came out in 1973 the use of DNA to elucidate family and genus-level relationships was still a decade away, and vascular plant taxonomy had changed only incrementally over the prior few decades. However, since the 1980s, when DNA extraction and analysis protocols were applied to vascular plants, significant parts of the original *Flora* quickly became outdated (e.g., genera assigned to the Scrophulariaceae eventually were more accurately placed in more than half a dozen other families; the Liliaceae was found to be composed of nearly a dozen families; and species in the grass genus *Agropyron* would end up mostly assigned to other genera). This isn't a criticism of the *Flora*, but rather a clear example of how any flora is a snapshot of what is known at the time of publication.

In 2012 the UW Herbarium approached the University of Washington Press about producing a 2nd edition *Flora*, and the idea was enthusiastically received. Serious work on the project began in 2013 and culminated in a printed version published in October 2018. This was truly a team and regional effort, with treatment authors and financial support for the project coming from all of the areas covered by the *Flora*: Washington, Idaho, Montana, Oregon, and southern British Columbia.

The changes between the 1st and 2nd editions of the *Flora* are extensive and occur from cover to cover. We have added a regional map and index to plant families on the inside covers, a more robust introductory section (the 1st edition had two pages!), included over 1,000 new illustrations, and added about 100 more pages. Table 1 summarizes important changes between the 1st and 2nd editions of the *Flora*. Most notable perhaps are the increases in the numbers of family and genera, along with a near doubling of the non-native taxa now documented in the region.

Now that we have the print version out, we are working with the UW Press to release an ebook version suitable for tablets and iPads. In 2019 we will begin raising funds to expand the website to provide updates to taxonomy, nomenclature, and identification keys as new information becomes available. In this way we hope to make sure that we don't wait another 45 years before the contents of the print version are updated. You can find out more about the *Flora*, 2nd edition on the project website: http://www.pnwherbaria.org/florapnw.php

Special thanks go to our colleagues in Idaho who provided financial support for this work, particularly Chris Davidson and Sharon Christoph, along with the Kinnikinnick and Pahove chapters of the Idaho Native Plant Society. Dr. Jim Smith at Boise State University provided invaluable feedback and editorial support for draft versions of the book. The *Flora* 2nd edition can be purchased through the UW Press website (http://www.washington.edu/uwpress/search/books/HITFL2.html) and should be available through your local booksellers. •

Citation

C.L. Hitchcock and A. Cronquist. 2018. Flora of the Pacific Northwest: An Illustrated Manual, 2nd Edition. Edited by D.E. Giblin, B.S. Legler, P.F. Zika, and R.G. Olmstead. University of Washington Press, Seattle, WA. 936 pp.

	Flora, 1st edition	*Flora*, 2nd edition	Change	% Change
Families	129	159	30	23.3
Genera	826	1,141	315	38.1
Species	3,555	4,818	1,263	35.5
Infraspecies	1,393	1,329	-64	-4.6
Native Taxa	3,559	3,891	332	9.3
Exotic Taxa	722	1,444	722	100
Total Taxa	4,281	5,335	1054	24.6

Table 1. *Summary of major changes between the editions of Flora of the Pacific Northwest. Thanks to Ben Legler for compiling these numbers. *The term taxa refers only to terminal taxa, also called minimum-rank taxa, consisting of subspecies and varieties along with those species that lack subspecies or varieties.*

ERIG

INPS ERIG Solicitation for Proposals

Every year the Idaho Native Plant Society (INPS) awards grants through the Education Research Inventory Grant (ERIG) program. Since 2005 the INPS has awarded over $24,000 in grants of up to $1000. Continuing in that tradition in 2019, the INPS will partner with projects that contribute to the appreciation, conservation, or knowledge of Idaho's native flora and vegetation. The purpose of the ERIG program is to stimulate and lend support to educational, research, and conservation activities that promote an appreciation for native plants and plant communities in Idaho. The Idaho Native Plant Society encourages you to submit a proposal for projects that may qualify. The deadline for submitting proposals is March 31, 2019.

Grant guidelines: The ERIG program is intended to support direct project costs. Grant proposals should not include expenses for salary and personal benefits, the purchase of personal equipment, equipment not dedicated to the project, indirect costs, or other expenses not essential to the project. Here are some examples of costs the grant may cover:

- Direct costs of travel, meals, and lodging.
- Supply and service expenses used for the sole purpose of the project (e.g., native plant material, interpretive signs, lab materials).
- Printing costs for public outreach material or research publications.

Application procedure and requirements: Proposals must contain the following information. Please be succinct:

1. *Project Title*
2. *Contact Information*: Name, address, phone number, organization/affiliation, and email.
3. *Project Description*: Outline the project objectives, methods, and final product.
   a. Explain how the project will benefit the appreciation, conservation, or knowledge of Idaho's native flora or vegetation.
   b. Will there be public access to the project?
   c. Describe how project success will be evaluated.
4. *Itemized budget*: Outline an overall project budget, including the amount you are requesting (up to $1,000). Include other funding sources.
5. *Timeline*: Please provide a timeline for completion of all major milestones associated with the project, including presentation of the results.

Project proposals must pertain to native plants of Idaho. Please limit grant requests to a maximum of $1,000, and be aware that less may be awarded due to INPS budget constraints and the number of applications submitted. Recipients of these awards have a timeline of two years from the date of the written award to complete their projects. Successful applicants will be required to submit a final report to the INPS documenting project accomplishments and a summary of the project to be published in the INPS newsletter, *Sage Notes*. We encourage applicants to become an INPS member if they are not already, however, membership is not a prerequisite to apply for, or receive an ERIG grant.

Please submit proposals by email to Bob McCoy at sawabi.inps@gmail.com or by post to: ATTN: ERIG Committee Chair, Idaho Native Plant Society, P.O. Box 9451, Boise, ID 83707.

Sawtooth Botanical Garden: Carol's Wildflower Garden Project

By Kathy Noble, Sawtooth Botanical Garden, Gardens and Facilities Manager

In 2015, the Sawtooth Botanical Garden decided to redesign its largest native plant garden. This is one of the first gardens visitors see when walking from the parking lot into the Garden. It was badly overgrown, weedy, and infested with rhizomatous grasses. Many of the original forbs had been pushed out altogether. We began a major clean-up by spraying, weeding, and removing unwanted materials, including a couple of ground squirrel homes and an old unoccupied badger tunnel. We then reworked the irrigation heads so that instead of spraying down the hill, the rotors would spray up the hill. This change significantly improved the water distribution. Even though we did not water more often, the plant material was being watered more evenly and everything bloomed longer and more prolifically.

We began working on our plant list with Dr. Stephen Love at the University of Idaho Aberdeen Research Station, and Steve Paulson at Native Roots. This garden is dedicated to Carol Blackburn for all the hundreds of volunteer hours she has given to the Sawtooth Botanical Garden the past 20 years. After receiving a degree in wildlife management from Humboldt College, Carol moved to Idaho and decided she wanted a Horticultural degree from the University of Idaho. She became an Idaho Native Plant Society member shortly after arriving in Idaho in 1979. Carol continues to be an indispensable resource to the Sawtooth Botanical Garden, someone we continue to consult with on an almost weekly basis.

Inspired by Dutch designers Henk Gerritsen and Piet Oudolf and their natural garden design work, Carol and I pored over nursery and seed lists from the Canadian border to Colorado and Utah looking for just the right plants to make the new native plant garden uniquely Idaho within the constraints of our budget. We started with grasses and then added forb species that the Garden did not already display. Fortunately, Native Roots was able to procure the seed for the plants we were most interested in showing (see Plant List). We also brought in some additional landscaping rock, and filled in the badger hole.

In June 2018, while we were still cleaning the planting area, our plugs arrived from Native Roots and we started planting the south facing slope. The very next day, a visitor backed their car right over the bottom of the bed and our new plants. So, we decided to place edging stone around the bottom of the bed so that the next visitor would hit the stone and know to stop their car. This garden space is a fairly steep berm, and we decided that a gravel mulch to minimize weed establishment would not be workable. We could not figure out how to beat gravity and keep the gravel mulch from moving down the hill at every opportunity. So for now, we have been weeding a section of the garden every week. The plants are all in blocks by variety to facilitate labeling and also to help volunteers and employees figure out which plants to pull or leave. I had read Denver Botanical Gardens *Gardening with Altitude: Cultivating a New Western Style* and learned about the difficulties they had in establishing a native garden. I knew we could not simply mix the plant varieties randomly, nor could we have any rhizomatous grass species. On August 12, 2018, we finally completed the last block of plantings and had a celebratory pitcher of iced tea!

As this native plant garden matures, we intend to harvest some of the grasses for a neighboring garden that needs some work, and replace the harvested grasses with more forbs. Native Roots was unable to get seed to germinate for 5 of our ordered forb species. We temporarily filled in these spaces with grasses. I would like to include more variety as Native Roots develops more woody materials and additional perennial species.

All gardens are art works in progress; they are never static. As new native plant varieties are developed, I hope we will be able to add those to our pallet so that Carol's Wildflower Garden will always look new and interesting to the many visitors who come to see the Sawtooth Botanical Garden. I would like to thank the Idaho Native Plant Society for awarding us ERIG funds to help purchase irrigation and other material used in the native plant garden, and for their ongoing support and encouragement to show off the beautiful native plants of Idaho, and for continued efforts to educate the public about the diversity and seasonal beauty of Idaho's natural flora. •

Plant List: *Bromus marginatus, Deschampsia caespitosa, Calamagrostis rubescens, Elymus elymoides, Koeleria macrantha, Muhlenbergia wrightii, Oryzopsis hymenoides, Sporobolus airoides, Aquilegia desertorum, Aquilegia scopulorum, Hymenoxys acaulis, Penstemon confertus, Potentilla jepsonii, Sphaeralcea munroana*

Sawtooth Botanical Garden: Alpine Rock Garden Project

By Kathy Noble, Sawtooth Botanical Garden, Gardens and Facilities Manager

The Sawtooth Botanical Garden has a circle garden positioned adjacent to Carol's Wildflower Garden that originally held a large stone sculpture and perennial plant species. However, over time this circle garden turned into a complete weed patch. One problem was an overhead spray irrigation system inadequate for the job. The Garden board decided to concentrate native plants and landscapes representative of Idaho's south-central ecosystems in the northwestern section of the Garden complex. Towards this end, we planned to remake the circle garden into an alpine rock garden.

To turn the circle garden weed patch into an alpine rock garden we needed the help and tutelage that only Dr. Stephen Love from the University of Idaho Research Station could offer. Dr. Love came to the Garden to present a class on native plants, and we took the opportunity to show him the alpine rock garden area and ask for recommendation locating plants in the planned project area. Dr. Love jumped at the chance to grow 18 varieties of *Eriogonum* for us from seed he had collected over the last 10 years. This will be the beginning of a formal botanical collection of buckwheats that we hope to add to in the coming years. It was exactly the help we needed to jumpstart the project.

We immediately started working on eradicating the weeds. After creating a clean planting area, we added 5–6 tons of landscaping stone, and gathered weathered snags and root wads to add texture and interest to the garden area. We next added native soil mixed with gravel to improve drainage and then began planting. Lastly we converted to drip irrigation and covered the tubes with gravel mulch. We hope to complete the irrigation and mulch before the snow flies but may have to add the finishing touches in the spring. I would like to thank the Idaho Native Plant Society for awarding us ERIG funds to help purchase irrigation and other material used in the rock garden project. •

Plant List: *Penstemon deustus, Penstemon eriantherus, Penstemon fruticosus var. fruticosus, Penstemon gracilis, Erigeron compositus, Eriogonum arcuatum var. arcuatum, Eriogonum caespitosum, Eriogonum capistratum, Eriogonum compositum, Eriogonum corymbosum, Eriogonum heracleoides, Eriogonum jamesii var. flavescens, Eriogonum niveum var. niveum, Eriogonum ovalifolium var. depressum, Eriogonum ovalifolium var. nivale, Eriogonum ovalifolium var. ovalifolium, Eriogonum ovalifolium var. purpureum, Eriogonum strictum var. proliferum, Eriogonum sphaerocephalum, and Eriogonum umbellatum.*

Intermediate Sundews*.....Continued from Page 9*

quandary to the South Idaho Rare Plant Working Group—none of the experienced botanists and enthusiasts there knew of verified records.

My last hope was to find *D. intermedia* in the field. Fortunately, in July 2017, I was able to take a day off of fieldwork and go to the Sawtooth Valley sites with Barry Rice and Beth Salvia, carnivorous plant experts from UC Davis. In an interesting connection, Barry's office on the UC Davis campus is just a brief walk from the Louis K. Mann Laboratory.

With Deb Taylor as our guide, we found lots of *D. anglica* at Mays Creek fen. We found no *Drosera* at Huckleberry Creek fen—it may be that we weren't in the same part of the fen that Moseley et al. (1994) investigated; or it may be that *Drosera* was no longer present—we noted shrubs and pines encroaching. A few days later, Barry and Beth searched the Smith Creek site and found *D. anglica*; further searches in the vicinity yielded only *D. anglica* and *D. rotundifolia*.

As I thought about how generously Beth, Barry, Deb and others had given their time to solving this conundrum, one lesson stood out: New 'discoveries' need to be documented with collections that have been verified by experts! Improbable reports of *D. intermedia* circulated for 25 years without verification, causing botanists to spend much effort that could have been focused on other rare plants.

In 2018, I presented our efforts and the absence of verified reports or specimens at the Idaho Rare Plant Conference. The attendees and I concluded that D. intermedia was falsely reported from the state and should be removed from the Idaho Rare Plant List. In this case, absence of evidence is, in fact, evidence of absence.

Continued on Page 15

CALYPSO CHAPTER

When: Meetings are the first Wednesdays of March, April, May and October at 7:00 pm. Field trips take place during the spring, summer, and early fall months.
Where: Meeting are held in the conference room of Idaho Department of Fish and Game, 2885 W. Kathleen Ave., Coeur d'Alene
Contact: Derek Antonelli, ds.ca.antonelli@gmail.com.

LOASA CHAPTER

When: Meetings are held the third Thursday of each month at 7:00 pm.
Where: Taylor Building, Room 248, College of Southern Idaho, Twin Falls.
Contact: Bill Bridges, bridgesbill34@yahoo.com.
Upcoming Events:
January 17: The speaker will be Tom Stewart from the Forest Service.
February 21: The speaker will be Andy West from Master Gardeners.
March 21: Kelvin Jones will give a presentation on Caves and Seeds.
April, 18: Sue from the BLM will give a presentation on fire restoration.
May 16: Don Morishita from the BLM will give a presentation on his work with weeds.

PAHOVE CHAPTER

When: Meetings are held on the second Tuesday of each month from September–April at 7:00 pm. Dates, times, or topics are occasionally subject to change. Upcoming meeting information is sent to members via postcard and/or email. Events are also posted on the Pahove Chapter page of the INPS website: http://idahonative-plants.org/local-chapters/pahove/
Where: The MK Nature Center Auditorium, 600 S. Walnut Street, Boise.
Contact: For more information about activities please visit the Pahove Chapter page on the INPS website, or email Karie Pappani at pahove.chapter.president@gmail.com.
Upcoming Events:
January 15: Holly Hovis and Kristin Lohr will give a presentation on Schoolyard and Community Gardens.
February 12: Bill Rember will give a presentation on the Clarkia Fossil Flora.
March 12: Lisa Harloe will give a presentation on the Owyhee Flora; and Michael Ottenlips will give a presentation on his research for the genus *Lomatium*.
April 9: Bill Borland will give a presentation on pond scum.
Southern Idaho Rare Plant Working Group: Led by Beth Corbin, this group meets throughout the year to research and exchange information on Idaho's rare flora in preparation for the Idaho Rare Plant Conference held every other year. If you are interested in participating in this process, please contact Karie Pappani at pahove.chapter.president@gmail.com.
Board Position Openings:
Pahove chapter is seeking a new board president. Current president, Karie Pappani, has served the chapter exceptionally for 8+ years, and the time has come to select her successor. Additional board members are also sought to fill various positions. Interested individuals are encouraged to contact the board at pahove.chapter.president@gmail. com.

SAWABI CHAPTER

When: Meetings are held on the third Monday night of October, November, January, February, March and May. Programs begin at 7:00 pm and refreshments are available afterwards. Each meeting is preceded by a short presentation on the plant family of the month.
Where: The Middle Fork Room of the Pond Student Union Building, lower Idaho State University campus.
Contact: Paul Allen, pokyallen@hotmail.com.

UPPER SNAKE CHAPTER

The Upper Snake Chapter is currently inactive.
Contact: Rose Lehman, jojorose@cableone.net.
If anyone is interested in reviving the chapter, they are welcome to contact Rose.

WHITE PINE CHAPTER

When: Meetings are held once a month except during the summer. Field trips can occur most any month. Please check the chapter website at www.whitepineinps.org for events which may be scheduled or finalized after *Sage Notes* is printed; or email the chapter officers at whitepine.chapter@gmail.com.
Where: Great Room, 1912 Building, 412 East Third St., Moscow (between Adams and Van Buren) at 7:00 pm.
Contact: INPS, White Pine Chapter, PO Box 8481, Moscow, ID 83843 or whitepine.chapter at gmail.com
Upcoming Events:
February 7: Pam Brunsfeld, retired Systematic Botany instructor, and director and curator of the University of Idaho Stillinger Herbarium, will be speaking on "Plants

and Pollinators." She will provide information on ornamental and native plant species you can plant in your garden to benefit butterflies, birds, and bees. This program is jointly sponsored by the White Pine Chapter and the Palouse Audubon Society.

March 21: Steve Cook, University of Idaho Professor of Forest Entomology and Plant Pathology, will present a program on Forest Health. Steve led a very interesting field trip in July 2018, and we had requests for more information on this timely topic.

April 24: Mike Hays, Botanist with Nez Perce-Clearwater National Forest, will present a program on his work protecting Spalding's catchfly (*Silene spaldingii*) habitat on the "island" between the Snake River and the Salmon River. He will review the Recovery Plan for Spalding's catchfly and describe how his work fits into this plan. Mike will report on new findings, including four new Spalding's catchfly occurrences found by his crew in Hells Canyon this past summer. The program will also include results from crupina control efforts. This and other weeds species are becoming the bane of recovery and restoration efforts for many native habitats. Mike will share what they are learning from their control treatments.

WOOD RIVER CHAPTER

When: Meetings are held various weekday evenings beginning at 7:00 pm.

Where: Meetings are held at the Sawtooth Botanical Garden, located three miles south of Ketchum, on Highway 75 and Gimlet Road.

Contact: John Shelly at boshelly@cox.net for information about field trips and presentations. Also, check the Sawtooth Botanical Garden website: sbgarden.org for updates on presentations. •

Intermediate Sundews**.....*Continued from Page 13***

Traits for differentiating the *Drosera* species

D. rotundifolia has round leaves (wider than long) that are prostrate.

D. anglica has narrow strap-like leaves (3-8 mm wide), most of which ascend upward at >45° (a few leaves on some plants may be prostrate).

D. intermedia has leaves that are intermediate in shape (2-4 mm wide) and arranged in a hemisphere--some prostrate, some ascending, and some at the angles in between.

Leaf shape may look similar in the latter two species, so leaf arrangement can help. Field photos can be valuable, since pressing often distorts the arrangement. Also, the flowering stems of *D. anglica* go straight up from the base, while those of *D. intermedia* arise at an angle or horizontally and then arc upward (Voss 1985).

D. anglica has spindle-shaped seeds; *D. intermedia* has stout, ellipsoid seeds. The seed coat of *D. anglica* has a flat appearance, like panes of stain glass (termed 'longitudinally striate'), while the seed coat of *D. intermedia* is papillose (Barry Rice, pers. comm. 18 Jul 2017). Additionally, *D. intermedia* is the only North American *Drosera* that forms central stems to 20 cm long over successive years of growth (McPherson and Schnell 2012). •

Literature Cited

Bursik, R. 1993. Fen vegetation and rare plant population monitoring in Cow Creek Meadows and Smith Creek Research Natural Area, Selkirk Mountains, Idaho. Idaho Conservation Data Center, Idaho Dept. of Fish and Game, Boise.

Davis, R.J. 1952. Flora of Idaho. Wm. C. Brown Co., Dubuque.

Kartesz, J.T. 2016. North American Plant Atlas. The Biota of North America Program (BONAP). Chapel Hill. Accessed 10 Mar 2016 at http://bonap.net/napa

McPherson, S., and D. Schnell. 2012. Field Guide to the Carnivorous Plants of the United States and Canada. Redfern Natural History Productions Ltd., Poole, Dorset.

Mellichamp, T.L. 2015. *Drosera*. In: Flora of North America Editorial Committee. Flora of North America North of Mexico. Vol. 6. New York & Oxford.

Moseley, R.K., R.J. Bursik, F.W. Rabe, and L.D. Crazier. 1994. Peatlands of the Sawtooth Valley, Custer and Blaine Counties, Idaho. Idaho Conservation Data Center, Idaho Dept. of Fish and Game, Boise.

USDA, NRCS. 2016. The PLANTS Database. 2016. National Plant Data Team, Greensboro. Accessed 19 Feb 2016 at: https://plants.usda.gov

Voss, E.G. 1985. Michigan Flora Part II. Cranbrook Institute of Science & University of Michigan Herbarium, Ann Arbor.

IDAHO NATIVE PLANT SOCIETY
PO Box 9451, Boise, ID 83707
www.idahonativeplants.org
ADDRESS SERVICE REQUESTED

Find us on: facebook

Don't forget to renew for 2019!

Idaho Native Plant Society Membership Form

Name _____

Address _____

City/State _____ *Zip* _____

Phone _____ *E-Mail* _____

Chapter Affiliation:

- ☐ Calypso (Coeur d'Alene)
- ☐ Loasa (Twin Falls)
- ☐ Pahove (Boise)
- ☐ Sawabi (Pocatello)
- ☐ Upper Snake (Idaho Falls)
- ☐ White Pine (Moscow)
- ☐ Wood River (Ketchum/Sun Valley)
- ☐ No Chapter

Membership Level:

- ☐ New ☐ Renewal
- ☐ Senior $10
- ☐ Student $10
- ☐ Individual $17
- ☐ Household $22
- ☐ Sustaining $35+
- ☐ Patron $100+

I would prefer to receive ***Sage Notes***: ☐ Print ☐ Electronic ☐ Both

Send completed form and full remittance to:
Idaho Native Plant Society
P.O. Box 9451
Boise, ID 83707

Memberships run calendar year. New memberships enrolled after June 1 include the following year. ***Renew or join online:*** *https://idahonativeplants.org/membership/*

Sage Notes is published quarterly by the Idaho Native Plant Society. Past issues can be viewed online at: https://idahonativeplants.org/sage-notes/

Submissions: Members and non-members may submit material for publication. Relevant articles, essays, poetry, news, announcements, photographs and artwork are welcome. Authors, artists and photographers retain copyright to their work and are credited in *Sage Notes*. Send all submissions electronically to the editor at the link below. Please provide a phone number and/or email address with your submission. Submission deadlines are January 8, April 1, August 1 and November 1.

Advertising: Advertisements help reach environmentally-minded, native plant-loving customers and help support INPS. Prices: 1/8 page = $5, 1/4 page = $8, 1/2 page = $15. Submit ads electronically to the editor (JPG, TIFF, PSD or PDF files). Send payment to: Sage Notes Ads, P.O. Box 9451, Boise ID 83707.

Editor: Michael Mancuso, sage-editor@idahonativeplants.org